

VOLUME 17 NUMBER 9

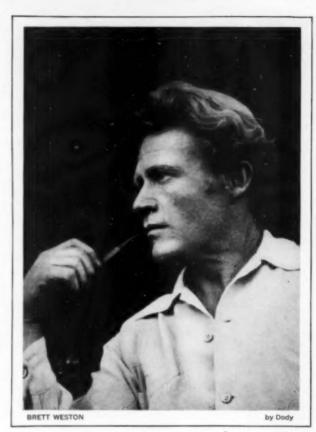
SEPTEMBER 1951

# **Q.** What story lies behind this picture?

A story of a great new stride in photography. This unretouched photograph of Brett Weston was taken by Dody Warren in natural north light, using close-up lens (see below) and time exposure. Film was Polaroid Type 41, black and white.



Dody



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# To save you hours in the darkroom... we spent years in the lab!

Our new Photo Bulletin No. 72 is out!

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#### INDOOR SPORTS . . .

EDITING AND publishing a magazine, such as PSA JOURNAL, is remarkably like having a baby every month. Its arrival eagerly is awaited. Delay raises questions and worries. When the day of days dawns, relatives are delighted. Friends take one look, and leave. Acqaintances smile comprehendingly and say that everybody is bound to have better luck sometime.

ALL THESE things happen to PSA JOURNAL, every issue! It is praised and blamed. Fortunately for editors and authors, readers vary widely in their thinking, praising different good points and damning different shortcomings. Not enough agreement, usually, to reach a majority opinion!

So the editors and authors retire to their ivory towers, cache the shower of gold which has been their reward, and begin to ponder how they can make PSA JOURNAL please everybody simultaneously. They review the gripes to see where improvements can be made, solace themselves with the letters of praise, and wonder why paper, type, and economics, to say nothing of editing and publishing, just cannot be more flexible and cooperative.

ALL OF which is preliminary to saying that by the grace of time, economics, the Publications Committee, and the Board of Directors, PSA JOURNAL now appears in two parts. Part II is dedicated to news of the Society and to chit-chat and repartee which so many members find so delightful. Part I is directed to photography and to making PSA JOURNAL more truly representative of American photographic activities in the international scene.

FOR THE future then, intriguing yakatayakata in Part II, informative photographic articles in Part I. And hope that sometime somebody will like the whole baby!—V.H.S.

#### PSA CONVENTION

Detroit, Michigan, October 10-13, 1951

#### COLOR FEATURE . . .

ON PAGES 541 to 572 will be found the second Special Feature of PSA JOURNAL to be compiled by the Color Division. The first, a supplement in September 1950, was most favorably received by color workers everywhere. Our hope is this feature will be equally well appraised. The articles and illustrations have been selected to give helpful information to all readers of PSA JOURNAL, especially the serious color worker.

MUCH OF the preliminary work on material was done by the Color Division Editorial Committee consisting of Paul J. Wolf, APSA, Hawthorne, New York; H. G. Mitchell, Chicago, Illinois; Merle S. Ewell, Los Angeles, California; and Karl A. Baumgaertel, APSA, San Francisco, California.

Many of the illustrations appearing in this issue have been made from color transparencies with outstanding exhibition records, and have been generously loaned for PSA JOURNAL publication by their makers.

GEORGE F. JOHNSON, APSA Color Editor

#### OUR COVER

Our cover this month pays tribute to Detroit—the site of the Society's October Convention.

"Torchite" by Edward W. Keith was taken from the foot of Station Street, "South of the Border" in Windsor, Ontario, Canada. This picture will give those attending the Convention a preview of the Detroit skyline, which they will see at the barbecue on October 10th.

The 15-minute exposure at 1/8 on Super XX 120 film was developed in DK-20 for five minutes and printed on Kodabromide F-3, developed in Dektol two to one solution, toned in Eastman Blue Toner, and ferrotyped.

Fortunately, during the entire exposure the searchlights remained steady. The occasion was the opening of the Detroit Community Chest Drive during 1950.

PSA JOURNAL, Vol. 17, Sept. 1951

# Great Picture BY ANSEL ADAMS

This appealing photographic study is one of many pictures Ansel Adams has made with the new HASSELBLAD Camera. Famed for his distinguished practice and teaching of photographic technics, Mr. Adams has found in the HASSELBLAD an instrument to match the requirements of the perfectionist.

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## New Aids for Better Picture Making

JACOB DESCHIN, APSA

From all accounts, it appears that the Japanese may have done it again, this time in the lowest-priced 21/4x21/4 twin-lens reflex camera ever placed on the market. The camera is the Ricohflex and the price \$39.95, with leather eveready case extra at \$7.95. Whether it will establish itself as "the poor man's Rollei" will have to wait on the time it takes to give it a fair trial, but at the moment it's a good job for the money. Best of all, it gives persons who have been kept away by price from enjoying the benefits of twin-lens reflex photography an opportunity to do so at an expenditure within the means of many more than can afford the higher-priced outfits.

The Ricohflex has been introduced in the Eastern states by Service Photo Suppliers, Inc., 151 West 19 Street, New York City, It is made by Asahi Seim Itsu Kogyo Co., Ltd., in Japan, and is imported by Photographic Importing and Distributing Cor-

poration, of New York.

The camera uses standard No. 120 rollfilm and is equipped with coupled 80mm f/3.5 Ricoh anastigmat lenses, the performance of which is reported to be exceptional. The camera's other features include three shutter speeds, 1/25, 1/50 and 1/100 plus bulb; internal synchronization for flash at all speeds, and a self-erecting viewing hood that closes with one motion and is equipped with a hinged magnifier for critical focusing. In addition, the camera has a depth-of-field scale visible from above and calibrated with the distance scale on the coupled viewing lens; focusing from 31/2 feet to infinity by rotating milled rings on the lens mounts; standard A.S.A. fitting for use with any popular flashgun; sockets for tripod and cable release; hinged back with good pressure plate. The Ricohflex is made of welded steel with black grain leather covering, the metal trim is chromeplated, and a metal double lens cap is supplied.

Another good buy, this time from Germany, is the simplified and economized version of the Exakta camera called the Exa, a 35mm single-lens reflex camera introduced in America by Exakta Camera Company, 46 West 29 Street, New York 1, and costing \$108.90 to \$133.95, depending on the lens supplied. That is, with the 1/2.9 Ludwig Meritar, \$108.90; with the 1/2.9 Meyer Trioplan, \$124.25; with the 1/3.5 Zeiss Tessar, \$133.95. The focal length in all cases is 50mm. A leather

eveready case is \$9.95.

Smaller and lighter than the Exakta, though including some of the latter's best features, the Exa is simpler to use and because of the much lower cost, will appeal to many who like the principle of the single-lens reflex with its interchangeable lens mount feature. The viewing hood, which has a built-in magnifier for critical focusing on the ground glass, may be converted for use as an eye-level sport finder. The camera has flash contacts for normal flash work and for strobe; automatic frame counter; body release, and all-metal body finished in corrugated black and chrome.

An attractive feature is the camera's size: 5 inches long, 3½ inches high and 2½ inches deep.

Two other small cameras are in the news. The Regula II, a new German 35mm miniature, was announced by Penn Camera, 126 West 32 Street, New York City, at \$22.50. Formerly \$49.50, the camera has an f/3.5 50mm lens, built-in flash, synchronized Prontor-S shutter, with speeds to 1/300th, and automatic frame counter. An eveready case is \$3.50.

The Elioflex, a \$27.95 Italian camera taking No. 120 rollfilm for 12 exposures 2½x2½ inches and with lens openings from 1/8 to 1/22, has been imported by G. A. Buttafarri, 207 Fourth Avenue, New York City. The camera has a brilliant type finder with bood, built-in synchronization, combined shutter cocking and film wind and shutter speeds from 1/25th to 1/200th.

#### Darkroom

A number of useful items for darkroom workers were introduced at the recent Photographers' Association of America convention in New York by Franklin M. Morgan, 303 West 42 Street, New York City. In addition to a complete line of darkroom sinks, water refrigerators and temperature control units, Mr. Morgan showed a film loading cabinet that eliminates opening and closing of film boxes for loading; a liquid plastic for transferring printed material from paper to a plastic sheet; light-proof cloth shades for converting any room into a darkroom merely by pulling down the shade; and an automatic print fixer. Details and prices on all of these are available from Mr. Morgan just by dropping him a postcard and mentioning PSA JOURNAL.

Another item introduced at the show, which in the main had little that was new, was Vari Lamp, a new cold-light enlarging unit, color-balanced specifically for use with Varigam enlarging papers, which was unveiled by the Aristo Grid Lamp Products, Inc., of Forest Hills, N. Y. The fourth in the company's line of cold-light lamps, Vari Lamp has twice the printing speed of the Aristo W-35 lamp, formerly recommended for use with Varigam papers, and is about 50 percent faster than tungsten. The new lamp may also be used for enlarging papers other than Varigam, and fits present Aristo power units.

High Speed Varigam, two to three times faster than regular Varigam, the variable contrast enlarging paper, has been placed on the market by Du Pont Company. The new paper is printed and processed like conventional enlarging papers. Used with filters, High Speed Varigam has a printing speed equal to that of Velour Black normal grade paper. It is available in seven surfaces.

Kodak Mural Paper R, single weight, is announced by Eastman Kodak for printing photomurals. The paper can be folded or creased, necessary steps in mural processing, without damage. The paper's single weight

(Turn to page 534)

PSA JOURNAL, Vol. 17, Sept. 1951



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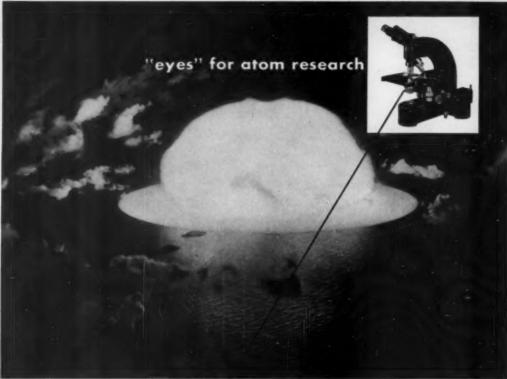
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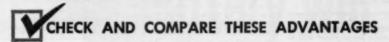
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The REALIST is a precision optical instrument of outstanding quality. Its closely integrated stereo-photographic system is based upon unique REALIST features that give you pictures with all the brilliance of color, sharpness of detail, depth and true-to-life realism of the original scene. With the REALIST, you photograph exactly what you see in the view-finder with the same brilliance of color, detail, sharpness of depth, and true-to-life realism.

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With the REALIST, all of the hard work has been taken out of stereo. If you so desire, once you have snapped the picture, there's nothing more for you to do but sit back and enjoy the ultimate in stereo photography. Taking the picture is easy, too, People who never before operated any camera are getting amazing results. You can, too,

#### Top Quality

Stereo demands quality, because 3rd dimension pictures must be the equal of the original scene. No stereo picture can be better than the camera with which it is taken... or the viewer in which it is seen. That's why Stereo-REALIST has always insisted on top quality in every item of its line.

#### **Economy of Operation**

The REALIST gives you greater economy of operation than any other camera — anywhere. Because it utilizes the classic square stereo frame, you get 29 exposures from a 36-exposure roll of film — 16 from a 20-exposure roll! Dollar for dollar, REALIST is your best camera buy.

Compare the REALIST Camera with any other and see why only the REALIST can give you completely matched, engineered equipment of the finest quality. See your nearest dealer or write to us direct. DAVID WHITE CO., 387 W. Court St., Milwaukee 12, Wis.

## STEREO Realist

Stereo-REALIST Cameras, Projectors, Viewers and Accessories are products of the David White Co., Milwankee

#### ACCESSORIES

Every Stereo-REALIST Camera accessory will add immeasurably to your enjoyment of stereo. See your nearest dealer for a complete catalog and list of prices,



#### FILM IDENTIFIER

Eliminate possibility of losing valuable film by putting your name and address on the roll. Convenient pocket size. Metal construction



#### FILTER KIT

Identically matched pairs of 3 filters for color film: Type A conversion, haze, and flash filters. All coated optical glass, Leather case,

#### PROFESSIONAL CALLING CARDS

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#### COUNTRY SCHOOL OF PHOTOGRAPHY SO. WOODSTOCK, VT.

Tutorial instruction by John W. Doscher in salon photography, pictorial control, color, and special processes.

will make overlapped joints reasonably inconspicuous. Kodak Mural Paper will be available in contrasts 2 and 3, in sheet sizes 8x10 to 20x24 inches and rolls 42 inches wide by 100, 250 and 500 feet long. It is somewhat faster and colder than Portrait Proof Paper, slightly alower and warmer than Kodabromide, and tones well.

#### Lenses and Shutters

The Reflectar lens, in 40-inch focal length, f/8 aperture, for use on standard still 35mm cameras as well as on standard 35mm motion picture cameras, is announced by the Zoomar Corporation, 381 Fourth Avenue, New York 16. The lens is also made in 80-inch focal length f/8 or f/14 for 21/4x31/4-inch cameras. The lenses are said to be highly corrected, with maximum resolving power, and will be used in special application by the armed forces. A number of accessories have also been made available for use in stopping down the lens aperture by hand or by remote control; for convenience in mounting filters, for viewing and focusing.

Graffex, Inc., now offers 101mm Ektar lenses in Kodak "800" shutters for use on Pacemaker "23" (2½43½) Crown and Speed Graphics and the Century Graphic. The shutter permits exposures up to 1/800th of a second, has click lens stops and is synchronized for X, F and M type lamps. The Kodak "800" will supersede the No. 1 Flash Supermatic Shutter previously supplied on these cameras. The Ektar f/4.5 in the new shutter is \$74. The Century Graphic with the new shutter is \$169.40, with the Speed and Crown, \$241.40 and \$201.40, respectively.

This company also has an optical viewfinder (38) for use with wide angle lenses that fits the standard mounting clip on Speed and Crown Graphics and the Century Graphic. The finder can be equipped with masks for any film size and lens focal length.

The 101mm 1/4.5 Kodak Ektar lens has been made available mounted in the Kodak Synchro Rapid 800 Shutter. The lens and shutter may be used on any 2½x3¾ camera taking interchangeable lenses. The lens in the 800 shutter costs \$73.

#### Color

Ansco has brought out an improved Plenacolor, the color negative film. Initially, it was placed on the market in the States of Texas, New Mexico, Louisiana, Arkansas, Misaissippi and Kansas, but may be available more generally by the time you read this. Plenacolor will be sold in 120 and 620 sizes, six exposures 2½x3½ inches, nine in the 2½x2½ size, twelves in cameras

taking 15/x2/4-inch pictures. The price of \$1.45 per roll includes processing and excise tax. Prints from the color negatives will be 36 cents each. The film speed is ASA 25, which permits exposures in simple box and folding cameras in full sunlight. Under similar conditions, other cameras should be set at 4/11 and 1/50th of a second.

A new slide changer, the Newmatic, made by Newmatic Corp., of West Hartford, Conn., that changes 2x2 slides by remote control rather than by individual handling, is now on the market. Slides are changed by trigger action, which pushes slides into projection position, then stacks them in the same order they were loaded. The new device takes 30 slides at a loading in any type mount and costs \$16.75.

#### Flash

A \$12.50 flash unit designed for the Contax IIA and Contessa 35 and which may be adapted for the Realist stereo camera, the Argus 21 and 4C as well as other camera accessory clip, will soon be placed on the market by the R. A. Simer! Manufacturing Co., 1 Liberty Street, Madison, Conn. Designated as Sims Series E, the flash device has flash lamp ejector, removable reflector, outlet for multiple flash, and uses four penlight battery cells. It is molded of black Tenite and the parabolic reflector is made of aluminum alloy.

Bright Star Battery Co., Clifton, N. J., have made available the Dual Flashtester, an ingenious device (\$4.95) for testing all sizes of flash lamps and batteries. It is neat, simple to use and from all appearances, positive and reliable in performance.

The C.O.C. Pocket Flash, a compact flashgun for which are available interchangeable cables to fit all cameras with built-in flash or pre-synchronized shutters, is introduced by Camera Optics Manufacturing Corp., 101 West 47 Street, New York. There are two models, the standard at \$12.95, and the B-C (battery-capacitor type) model at \$16.95.

The Pract "B-C" Capacitor Flash Gun is offered by Praco Photo Products, Inc., 2288 Amsterdam Avenue, New York. The pre-synchronized model is \$13.75, the nonsynchronized model \$14.65. Batteries are included.

#### Miscellaneous

Hy Schwartz, of Kalart, recently showed a Focuspot adaptation for the Rolleiflex camera. Widely used on press cameras for focusing in poor light, the battery-powered device attaches to the base of the Automatic Rolleiflex and is coupled to the camera's focusing mechanism. Two narrow beams of light are projected on the subject. As the camera is brought into focus the beams meet, bringing the subject into sharp focus. The device costs \$35 and is probably available now.

Paragon Depth-of-Field Scales, a separate chart for each focal length of lens, is an-

#### PSA CONVENTION HIGHLIGHTS

Are you a "Who Dunnit" fan? Then come to Detroit to the '51 Convention and attend the Mich. State Police program.

#### PSA TRADING POST

Open to individual members, free of charge. Limit 23 words each. Copy closes the tenth of the second preceding month before publication.

For Sale—8x10 Grover View, 5x7 back, 4-7-12-18 convertable lens. Wanted— Kodak Electric Timer, boom lights, enlarging meter. Don R. Aufderheide, 4246 Cornellus, Indianapolis 8, Ind.

Wanted—Vibrating retouching stand; Kodak Electric Timer. Don Aufderheide, 4246 Cornelius, Indianapolis 8, Ind.

For Sale—Automatic Rolleiflex, Xenar, case, factory flash (flash works on self timer.) Like new. \$150. Justin Hartley, Colchester, Connecticut.

For Sale—4x5 Graphic View, case and/or 90mm w.a. Raptar, 125mm and 180mm Dagors, all in shutters. Frank Gill, 106 Lincoln St., Oil City, Penna.

nounced at \$1.50 each, postpaid, by V. C. Nitsche, P.O. Box 6032, Mid City Station, Washington, D. C. The depth for each f/number can be read instantly without computation. Each scale is printed on durable parchment paper and mounted on pressboard. The scales are available for the following focal lengths, in millimeters: 35, 44, 50, 51, 60, 65, 70, 75, 80, 83, 85, 90, 100, 105, 115, 120, 127, 135, 150, 165, 180, 190 and 210 millimeters.

All Pacemaker Speed and Crown 3½x4½ and 4x5 Graphic cameras are now being equipped with Ektalite Field Lenses for brighter ground-glass viewing at no increase in price. Owners of most older model Speed Graphics may convert their cameras by purchasing a Graflok back equipped with the Ektalite lens.

The new Brumberger Stereo Viewer, with battery-powered illuminating system and taking standard stereo mounts, has been placed on the market at \$9.95 by Brumberger Sales Corp., 34 Thirty-fourth Street, Brooklyn 32, N. Y. The same company will send on request a simplified instruction sheet for cutting and mounting stereo pairs from the 35mm roll. A unique chart is supplied to make matters easier.

The Kodak TBI Metal Cable Release No. 2, which replaces the cloth-covered release of that name, is offered by Kodak. The \$4 release has a universal-type taper tip and a locking device for time exposures.

A new line of Kam-Ra gadget bags made of Cordograin, a new plastic that looks like leather, has been introduced by Service Manufacturing Co., 120 East 16 Street, New York. Prices range from \$8.95 to

"More Brilliant Projection," a 30-page booklet on the subject, may be obtained free from Radiant Manufacturing Corp., 1204 South Talman Avenue, Chicago 8, Ill. Among the subjects discussed are projectors, lenses, seating arrangements, screens, reflection and showmanship.

A leaflet describing the uses of polarizing filters when exposing color or black-andwhite film is available free from Enteco Industries, Inc., 610 Kosciusko Street, Brooklyn 21.

PSA JOURNAL, Vol. 17, Sept. 1951

# This they battery will fire 20,000 flash bulbs!

You can install an "Eveready"
No. 412, 22½-volt "B" battery
in one of the new BatteryCapacitor Flash Units now available for synchronized shutters,
and fire up to 20,000 flash bulbs
of any size without putting in a
new battery. Your pictures will
always be well lighted, shutter
synchronization correct.

B-C Flash Units, powered by an "Eveready" "B" battery, fit any professional camera, never get out of synchronization with the shutter because of battery exhaustion. All the available light strikes the exposed film when the shutter opens. You don't lose "Ace" shots, as sometimes happens because of a rundown set of round cells in the old type flash gun. With the completely different B-C principle, you can install the tiny "B" battery and practically forget it! It's leakproof... lasts for months and months!

If you take color, you'll want

to use an "Eveready" "B" battery and the B-C system because you can fire 5 or 6 extension lamps, positively, at any time. Your multiple flash shots will be perfectly lighted and you won't be worried about the film not getting its full exposure.

B-C devices available today were designed around "Eveready" brand batteries. There are 12 manufacturers producing Battery-Capacitor units. See your photographic supplier.

Send for Free Bulletin on Flash Photography . . . and the B-C Photoflash System

For complete information on flash photography and "Eveready" photoflash batteries used in B-C equipment, write for Battery Engineering Bulletin No. 5, Battery Engineering Department, National Carbon Company, A Division of Union Carbide and Carbon Corporation. The terms "Eveready" and "Mini-Max" are registered trade-marks of Union Carbide and Carbon Corporation

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- small and compact.
- Wide angle even coverage reflector.

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AMERICAN SPEEDLIGHT CORP

#### APPLESEED'S CORRESPONDENCE

Homer, Michigan

DEAR JOHNNY:

After reading your very interesting article in the PSA JOURNAL,

"Take a Photographic Trip to Gaspe," my wife and I and another couple have decided we would like to make the trip for our vacation.

It seems that due to business responsibilities we are unable to make plans for the vacation till the last week in September and the first week in October. Checking through our AAA Tour Book. I noticed that many places are closed after September 15th.

Would you advise this trip that late in the season and do you believe we would be able to find accommodations in that section at that time of the year? We will be very grateful for any information you can give us as it would be a long distance for us to travel and not be able to enjoy the trip.

C. A. ARMSTRONG

Concord, Michigan

DEAR JOHNNY:

What do you think of the last week in September for a trip through the Gaspe Peninsula? How about the weather at this . What about tourist rooms this late in the year?

You are doing a swell job in PSA JOURNAL. Keep it up. Yours is the first article I read. Let's have an article on how, when, and where to tone prints.

R. H. NICHOLS

DEAR MR. ARMSTRONG AND MR. NICHOLS:

Since both of you have asked for information on a trip to the Gaspe late in September or early in October, I am replying with one letter. Perhaps you will wish to contact each other about your plans as you live so near.

A trip to the Gaspe in late September or early October would be extremely beautiful but rather cool. Depending upon how much time you had to spend, you might consider traveling through New England either on your trip to the Gaspe or on your return. The area around Pittsfield, Bennington, Manchester (Vermont), Woodstock, and the areas north toward Quebec are exquisite during the first week in October.

I have never been on the Gaspe in the fall, but I know this much: the air is often clear and bright with morning frosts. Fishermen are still at work; in fact, they continue until November. Accommodations are fewer but adequate. If you go, please let me know how you make out.

JOHNNY APPLESEED, APSA

#### BOOK REVIEWS

MAKING BETTER COLOR SLIDES, by Fred Bond, Volume I and II, Camera Craft Publishing Co., San Francisco, Calif., Vol. I, 110 pages, Vol. II, 118 pages, 6x9, illustrated, cloth, each volume \$3.50, 1951, available postpaid from PSA JOURNAL.

The author starts right out to tell the reader about making pictures in color by enumerating the assets of a good color slide and by showing some good color slides and telling how they were made. Over about Chapter III he dips into some of the necessary technology of color, then proceeds to discuss light, shooting problems, and exposure.

In Volume II he becomes a little more technical, but still follows the practical approach, telling how to solve the special problems encountered in color with artificial light or flash and with color shots of children, pets, nature, portraits, close-ups, stereo, and gardens. There are chapters on filters, lenses, and other operating details, plus more good pictures and data on how they were made.

Being a photographer himself, and an

amateur at heart, this author writes the way he would like to have photographic books written. He insists that it is the person, not the equipment, who makes the picture. Certainly he does his utmost to cram that person with what he should know about making color slides. If better slides aren't made now, it certainly isn't Bond's fault! He's done his share, plus!

His chapter on filters is possibly the most practical and understandable recently written. Bond unscrambles the confused filter identification situation, tells what each type of filter does and when and how it can be used, indicates what results may be expected. His chapter on composition follows the same theory-how to use composition to achieve a desired end.

This practical operating approach is a boon to the amateur, who isn't particularly interested in the scientific, but wants to know what a film, filter, or lens will do, and under what conditions, and what to do about it. Similarly, in discussing the illustrations, of which there are many, the author points out the esthetic as well as the technical qualities. In fact, it is his basic theory throughout the two volumes that the amateur should get the technical end of photography deep into his subcon-scious and thus free all his cerebrative faculties for artistic creation. "Technical perfection alone," he explains, "never made a picture."

Amateurs and professionals alike will find these two volumes fascinating and informa-

A PHOTOGRAPHER'S DAY IN LONDON, by Henry G. Russell, The Fountain Press, London, England, 48 pages, 41/4x61/4, illustrated, paper, 50 cents, 1951, available postpaid from PSA JOURNAL.

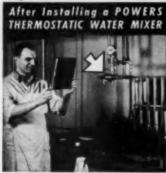
This interesting little volume, with its photographs made by Contax and Rolleicord, suggests to the visiting photographer how he may "do" tremendous London by limiting his camera work to a Saturday and Sunday in the vicinity of Trafalgar Square, Hyde Park, and the Thameside and Bankside. It recommends the best locations for the camera, the best time of day, and even the preferable filter.

Aside from the fact that the book deals with London, it presents sound advice for photographing any large city. Not infrequently the amateur is overwhelmed by the immensity of a metropolis, starts shooting blindly, and ends with dozens of pictures he later wishes he had never made. Russell covers London in about 22 shots, but he makes every shot count-and also say, unmistakably, "This is London!"

PSA JOURNAL, Vol. 17, Sept. 1951



my nice color separation negatives. hours of painstaking work wasted. Another costly delay and waste of ma-terials." The cause? Fluctuating water temperature.



"A PERFECT set of negatives . I'd never again be without a POWERS thermostatic water mixer. It is accurate and dependable."... says V. G. Lisanti, head of Color Print Dept., SHIGETA-WRIGHT, Chicago.

New Wide Range Model gives perfect control from 60 to 125°F—the whole range of photographic requirements. Control within 1/2 F. reported by users. Recommended by leading film manufacturers.

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PHOTOGRAPHY FOR TEEN-AGERS, by Lucile Robertson Marshall, Prentice-Hall, Inc., New York, N. Y., 165 pages, 5½x8, illustrated, cloth, \$2.95, 1951. Available postpaid from PSA JOURNAL.

This is one of the most complete and practical books on photography recently to come from the press. The fact that it is directed to teen-agers should not deter graybeards. They'll learn plenty from it,

The author leads the beginner into photography in a highly logical manner, explaining in detail the important steps, presenting much good advice, and encouraging the teen-age beginner progressively to attempt more difficult feats. Even the illustrations are inviting, being the kinds of pictures which teen-agers themselves would like to make. And with the making of each picture thoroughly explained.

There are chapters on cameras, developing, printing, outdoor and indoor shots, color, movies, hand-coloring, and the pursuit of photography as the beginning of a professional career. Throughout the book the author incorporates helpful suggestions which the reader can remember because they are interesting.

This is no younger-generation book, but an all-generation job which will tell the youngsters what they want to know about making pictures, and will invite the oldsters to get back in there and do a better photographic job next time. The enthusiasm of the book is positively contagious!

A COMPLETE GUIDE TO THE EXARTA V, by George J. Berkowitz, New York, N. Y., 188 pages, 4x6, illustrated, paper, \$1.50, 1951. Available postpaid from PSA TOURNAL.

CARL ZEISS, INC., Dept. C-58-9 485 Fifth Ave., New York 17, N. Y.

This is a concise manual of pointed instructions for operating the 35mm Exakta camera. It is particularly helpful because it is concerned chiefly with the use rather than the construction of the camera, and it encourages the owner to devote his time to making good photographs instead of admiring the mechanical ingenuity of designers and manufacturers.

It presents the customary illustrated in-structions, with numbered diagrams, for identifying the various Exakta dials, buttons, levers, and what-not. Yet it goes much further in presenting a simplified course in good photography which the Exakta owner, once he knows how to operate the camera without referring to the diagrams, can study with benefit in the way of producing acceptable pictures.

Much of the technical abacadabra, which so often serves the purpose of revealing the author's technical erudition and confusing the beginner, has been omitted. The Exakta owner, for instance, discovers that while a 100 different types of filters may be floating around, he needs scarcely a half-dozen, each of which does an indicated job. The volume fits pocket or camera case and that Exakta owner is wise who keeps it conveniently near, reads, and re-reads, it often.

## It's Detroit For Fun In '51

HERE is the latest report on the 1951 PSA Convention to be held in Detroit on October 10, 11, 12 and 13 at the Book-Cadillac Hotel.

This year's Detroit Convention, as PSA personalities throughout the country refer to the greatest array of photographic talent and personalities ever assembled, gives promise of being your best PSA Convention. Just being identified with Detroit gives the Convention an exciting glamour appeal associated only with the Motor City.

#### Detroit's 250th Anniversary

The gigantic birthday party celebrating Detroit's 250th Anniversary will be in full bloom come Convention time. The brilliant series of colorful public events is an extra and added attraction for Convention visitors. The city is all dressed up in gay party dress making a striking and colorful picture both by day and night. Many visitors will find the view from the Penobscot observation tower on top of Detroit's tallest building inspiring and breath taking. Here is an opportunity to obtain some excellent shots of Detroit as well as the Canadian shore line.

The Convention Committee headed by Lyall F. Cross, general chairman, has made every arrangement to make your Detroit visit one of your most pleasant experiences . . . one that you will long remember for its good fellowship and an al'round good time loaded with fun.

#### Lots of Photographic Spice

The fun side of the Detroit Convention is garnished with many a delightful photographic spice. Take the field trip to Greenfield Village. Here is a wonderland for a man, or woman, with a camera. Henry Ford brought many historic buildings and things with a real meaning in American history and gathered them together in this quaint and fascinating village of yesterday. Then just in case of rain the alternate trip to the Edison Institute is just as fertile a field. Many of you will probably want to include the Institute in your Detroit visit.

Like all visitors to Detroit you will want to make a trip "South of the Border" to Canada. This, too, is a special dish loaded with good food, Canada's choice beef served in a delicious barbecue. Entertainment will be in the Canadian manner presenting opportunity for those who bring cameras. Here, too, is the most advantageous spot to record Detroit's impressive skyline.

#### Have Your Picture Taken

More fun in photography will be a tasty dish with a gag. The picture gallery conveniently located in the Convention hotel will certainly attract its lovers of fun . . . and it's photography with you on the camera end or the focal point of the picture.

#### Meet the Folks

The Detroit Convention is your convention. The committee's objective has been to arrange just the sort of a deal that you would like. It will be a big friendly affair with everyone getting into the act. First off, names on badges will be big and easy to see. Here at Detroit everyone should know everyone else with provisions made for Division identification of those in attendance. An active host and hostess committee will be in constant attendance, and well identified, to show you the way around. Others will see that you get to meet the people you especially want to see. Another group of guides who know their way around will act as shooting guides.



The Wright Brothers Homestead and Cycle Shop at Greenfield Village, one of the features to be visited on the Field Trip.

## October 10-13

Whatever you want to do, someone will be ready and willing to help you obtain theater tickets, times and tickets for audience radio and television shows, directions to best places to shop both in Detroit and just across the river in Windsor, Canada, arrange for tours of Detroit's gigantic auto plants or her beautiful parks, etc.

And here you'll get a break,—the break that you'll appreciate most is the quarter hour break between programs. An opportunity to catch a smoke or meet another

PSAer with a common interest.

Sunday stay-overs are in for a special dividend. They will have the opportunity of visiting Cranbrook. This beauty spot just north of Detroit has been the subject for any number of prize winning pictures. Then, if you'd like something brand new, the Detroit Historical Museum, just opened, will give you a fine collection of fresh subject matter. The Museum is setting up a special photographic exhibit just for the PSA Convention.

#### Welcome

As for your PSA Convention Committee, the 1951 PSA Convention is ready to roll. The welcome carpet has been rolled out. The gay and colorful bunting is all in place. The fixings have been gathered from near and far. The pot of pleasure is boiling with a well photographically seasoned stew that all photographers will surely love.

Now it is your party, your very own convention. All photographers want to come to Detroit for Fun in '51. Do everything you can to attend this Convention for the

time of your photographic life.

Bound in the last two issues of PSA JOURNAL was a reservation and registration blank. Use it to fill in the necessary information and mail your advance registration to LaVerne Bovair, 3809 Hazelwood Avenue, Detroit 6, Michigan. Advance registration means that you'll have more time for "Fun in '51" in Detroit. Oh yes, urge your friends to come along including those who are not now members of PSA. Everybody is welcome at a PSA Convention.

#### HEADLINE TALENT

Fred Bond is very much in the limelight these days he has just published a two volume book dealing with color photography. Fred has long been our leading color authority with the "Know-How" to successfully use Kodochrome, Ansco Color, and Ektachrome. This busy man will lecture on "Color Composition as Applied to Color Photography." He will illustrate the talk with slides that present concrete examples of his principles.

Maurice C. LaClair, pioneer in color portraiture, has developed a simple and effective system of lighting for a portrait in color. He has agreed to reveal this method



For those who stay over in Detroit after the PSA Convention for Sunday, October 14, 1951, the morning tour of Cranbrook for fun and pictures is well worth staying to see. Outstanding architecture where many prize-winning salon prints have been made—ivy-covered walls, tradition laden, are but a short distance from ultra modern structures of rare simplicity and beauty. Pattern shots or riotously radiant autumn color—it's all there for your camera. Photo by Walter J. Pietschmann.

of lighting by using models selected from the audience. No one can leave this instructive lecture without having gained an infallable method of photographing the entire family and their friends. The equipment is simple, and inexpensive, most amateurs already have most of it. Mr. LaClair's color portraits are exquisitely beautiful, and are recognized among professionals as "masterpieces."



Convention program being planned by Lyall Cross, Doris M. Weber, J. Elwood Armstrong and Earle W. Brown.



One of the exciting scenes from Karambi, showing Ed. Hurd and a trophy of the hunt.

#### Portraiture

Yousuf Karsh, FPSA, today stands unchallenged as the world's greatest portrait photographer. Seldom do great men such as Karsh reveal their trade secrets, vet that is what this famous man has agreed to do. It may be that few of us will ever have the instinct for posing the subject, or the timing for tripping the shutter at the critical moment, but at least Karsh will tell us how he does it.

Another portrait photographer who has carved out a well deserved niche as a professional is Eva Briggs, Master Photographer. In fact it is said, "She cut her baby teeth on a plate-holder." Fact is this proves to be more truth than fiction. Eva's parents were both photographers and as such were busy people. As a little girl, Eva used to pose her dolls in front of her cameras that were her toys, and she shot them in all sort of attitudes. Eva's studio is lined with portraits of the famous faces that have posed in front of her camera lens. This gifted woman will talk on "The Technique and Psychology of Character Portraiture.'

Few of us, unfortunately, can have a Churchill, or a Milton Cross to pose before our camera lens. We must do the common folk. If you are inclined to raise this question your problem can be solved. Olga Irish will talk on "Making Portraits of People Like You and Me."

#### Salon

The Detroit Photographic Guild has developed an international reputation for "Big, Blue, and Glossy Prints." It is a prize winning technique that has won this camera club an enviable reputation for winning competitions, and for print acceptances at exhibitions. The first team of the Guild, Armstrong, Bovair, Brown, Cross, and Lookanoff will demonstrate in a clear, concise manner their exact formula for making "Big, Blue, and Glossy Prints."

#### Creative

Perhaps the most potent influence on modern photog-

raphy today is Maurice Tabard, of Paris, France. He is recognized as a fashion photographer. The creative genius of this man does not hesitate to go beyond that factual presentation of the lens. He will speak on "Creative Photography." After sitting in on this program many undoubtedly will be given the inspiration to combine technique with imagination to produce many new prize winners.

#### Industrial

Industrial photography will be represented by Ed. Purrington and Leo C. Beebe. Ed will show us how a well equipped photographic department of a large automobile company goes about their work. Beebe, also of the Ford Motor Co. will deal with moving pictures as used by a large Industrial Empire. George Eaton of the Eastman Kodak Co, will conduct a clinic on "Industrial Photography."

#### Nature

The nature lover will come into his own when listening to W. H. Savary demonstrate his method of using long focal length lenses. Savary is a leading exhibitor in nature exhibits and has become widely known. He has worked in the Everglades, and all up and down the country. Also much of his famous work has been done in his own back yard, so to speak.

#### All Star

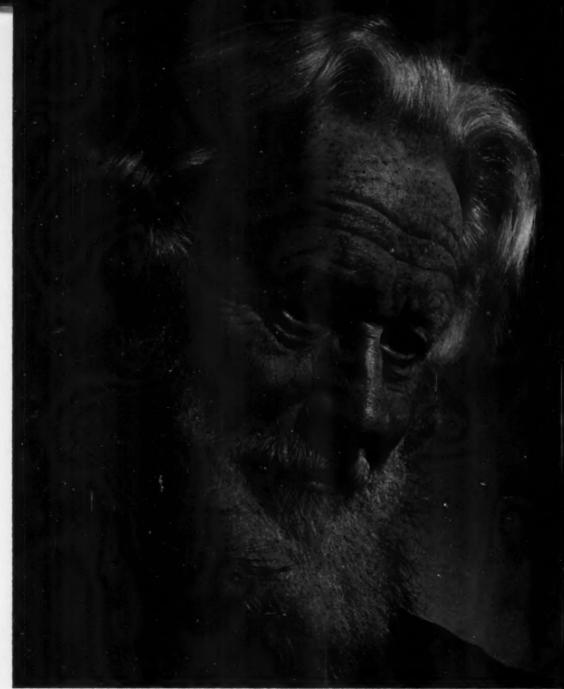
The Johnny Appleseed program will be one in which everyone can participate. If there is any problem that may be giving trouble this is the place to bring it. Johnny will appear in person for the first time at Detroit. This famous seer, known to all PSAers, will be ably assisted by Adolf Fassbender, David Eisendrath, Jr., Art Underwood, Adrian TerLouw, Lou Gibson, and Vincent Hunter. Another clinic that has long been a favorite is "The Slide Clinic." This year this will be headed by A. C. Klein of Milwaukee. Klein handles the PSA slide instruction sets throughout the middle west, and has made up some of his own as well. He lectures at camera clubs, and is generally recognized as a "ready analyist."

#### Adventure

In the way of entertainment, Helen Manzer will show her slide series on "Unbelievable Utah." Mrs. Manzer is a prolific exhibitor at our exhibitions, and a well known, and much sought after judge at color exhibitions. Ray Eggersted will show a movie. It will be a spine tingling trip down the "Mighty Colorado" through death laden rapids. E. J. Hurd with Milton Cross as his commentator will take you big game hunting in the African bush. It is a fascinating, and blood curdling movie.

Indeed, there are many more features, and everyone is invited to share in the education and fun that will be presented at this greatest of PSA Conventions. If you

don't come you will most certainly be the loser.



Bill Wasson

A Special Feature on Color Slide Photography



DICENTRA FORMOSA

Arrangement made to represent natural appearance of plant.
Foliage and flowers kept on as flat a plane as possible for accurate depth of field. Found growing naturally from British Columbia south to Central California.

M osr photographers have a particular type of subject matter in which they take a keen interest. It is natural that the results will be a better expression of what they see, rather than if they were shooting at random because they happened to be at a photogenic spot. Usually the subject chosen for specializing is one in which the person has an understanding and knowledge.

Nature, with its wealth of material, is no doubt the greatest source of material for the camera fan. Nature is very generous, in fact too generous, unfolding vast aweinspiring vistas with an endless chain of material as the seasons progress. It is up to the photographer to select the material as it is presented. Here is the key to good slides—selection; select the light, select the composition. Pay particular attention to details, such as foreground, framing, and interest.

How many times have we heard the statement, or expressed it ourselves, "If only we could have been here an hour earlier, or later?" The reason is usually light. A nice picture is lined up—a tight vacation schedule does not permit waiting—resulting in a mediocre picture or none.

At other times light conditions are perfect with a gentle breeze blowing. Another joy of nature, but not when every-

## FLOWER

AN ARTICLE BY

thing is set to photograph a flower close up at f/16 and 1 sec. One solution would be to take the flower where there is no wind, create a pleasing composition, and simulate nature's lighting.

The following notes on collecting and photographing flowers under artificial light may be of help to those who would like to pursue this interesting field. Any good camera may be used although one with ground glass or reflex-type viewer is easier to operate. Auxiliary lenses, wire frame attachments, tape measure, and distance coverage charts may be used successfully. One must remember that the closer the camera to the subject, the more critical the depth of field. A long focus lens will prevent distortion by keeping the camera farther from the subject. We are all familiar with the bulbous nose and jutting chin in portraiture taken with a short focus lens. The same results are apparent in flower photography. In close-up work, it is essential to stop down as much as possible and use slow speeds or time exposures.

In collecting specimens, the equipment for preserving flowers may be quite simple: a good size cardboard carton, some newspaper, a jar or bottle of water, and an extra jar-top perforated as a sprinkler. The specimen is wrapped loosely in a layer or two of dampened newspaper and placed in the carton. When a number of specimens are packed, use extra paper to keep from crushing. Cover the whole with several layers, and check occasionally to be sure the paper does not dry out. Flowers have been photographed after being packed two days by this method. When gathering specimens, visualize the arrangement and collect sufficient with enough extra foliage to fill in the base.

Flowers will stand up better under the lights if they absorb some water before shooting. Place them in jars of water in the bathtub with several inches of water to raise the humidity. Many flowers, badly wilted, may be restored in this fashion.

A single tone background will simplify the picture, with individual preference dictating the color to use. A light blue goes well with most flowers, although blue or purple flowers would be better against a light tan. Poster-boards obtained in most stationery stores serve very well. It is not necessary to have several shades of blue or tan, or whatever basic color is used, as many shades may be obtained from one color by lighting—intensify lighting for

## PORTRAITURE

A. STEWART

light shades, soften lighting for darker shades. With a light blue background, a nice gradation or sky effect will result by curving the background so as to catch the strongest light on the bottom portion, and shading to dark at the top. This will give added interest to the picture.

A rack of some sort should be used to position the background, enabling it to be angled to eliminate shadow. It is rather discouraging to have a nice composition set up, only to have the background fall and ruin it.

Vases, jars, flower frogs, and modeling clay have been used to hold the arrangement in position. All have been discarded in favor of a two pound coffee can full of damp builder's sand, to hold medium and large specimens. A pencil or sharp stick will serve to make a hole in the sand. Tap with pencil or fingers to firm the sand around stem. The sand is loose enough to enable free movement if a change in composition is needed. For smaller specimens, a can of sand, soup size, placed on the larger one, will serve as a sort of tilting top. A thickness or two of newspaper wrapped around the cans will eliminate reflections from the bright surface which might be bothersome.

Arrangement should start at the time the specimen is collected. Study its growth habits, the flower position; in short, become acquainted with the subject. A flower that grows singly on a long slender stem should not be crowded in a tight composition.

Choose one well-developed flower with prime foliage. This should be the tallest, as the key to the arrangement. The composition will then fall into the pattern the photographer pictured in the field. A standard rule of composition is the grouping of three, five, seven. However, rules may be broken, providing other factors, such as interest and technique, are strong enough. The flowers should be arranged to show their character to the best advantage: a front view of one, side view of another, or a partially opened bud.

Have a pair of scissors handy when forming the arrangement. Interfering twigs and unwanted leaves should be cut out. A leaf turned the wrong way and showing the light colored undersurface will sometimes ruin an otherwise perfect picture. Keep in mind the shallow depth of field which is always a problem in close-up work. The arrangement should be in as narrow a plane as possible.



ADOLESCENCE

A. Stewart

The opening flower spikes of Banksia integrifolia—an evergreen shrub, native to Australia.

A piece of cardboard with a cut-out of the same proportions as the film size to be used, will permit study of the arrangement, moving backward or forward until the most pleasing composition is found. It is easier to spot a distracting leaf or twig in this manner.

Many plant subjects, such as seed containers, dry seed, seed wings, etc., have color and interesting form, and are more photogenic than considered at first glance. Many apparently colorless subjects may be dramatized or rendered delicate with proper lighting, as lighting will bring out color and texture not apparent to the eye.

For a start, an inexpensive set of lights would be one No. 2 Photoflood and one No. 1 Photoflood in reflectors, and a spotlight of the Inky Dinky type. A slide projector will serve as an excellent spot. The thread on the bottom of most projectors will fit the tripod screw. Masks cut of aluminum foil and placed in the transparency holder will mask the spot of light to any desired size.

Start with the No. 2 Photoflood as the key light, high and to the right. Use the No. 1 Photoflood as a fill-in light slightly higher than the specimen and to the left. Move the fill-in light far enough back to lighten, but not kill entirely, the dark shadows cast by the key light. A fill-in light too near the subject will burn out all shadow



FLEDGLINGS

A. Stewart
Asclepias speciosa. One of the several species of Milkweed
growing throughout the United States. The pods were collected
unopened, and placed before a hot oven where they opened
evenly.

and modeling, resulting in a flat picture. The results will be better if all the light appears to come from one source. Move the lights, background, and subject until the effect is satisfactory with no shadows on the background. Have the key flower well lit to show character and modeling.

You may find two No. 2 Photofloods will be more satisfactory as the key light source for most large specimens. Or try one No. 1 Photoflood as the fill-in light with one No. 2 Photoflood to the left and high for better background and illumination. Added interest will result by using a spotlight opened wide and placed to the right and slightly higher than the specimen, or by placing the spotlight behind the plane of the subject for dramatic back lighting.

Move the subject well away from the background, light the background, then light the specimen with one No. 2 Photoflood as a key light. Add a spotlight for strong back lighting. Check on the ground glass for effect. Now turn off the background lights, and notice the different effect. Eliminate the key light, and note the dramatic effect with the spotlight only. Light spilling onto the background will not matter, as it will photograph black when spots only are used for dramatic back-lighted effects. Spun glass filters on lights are helpful, particularly on white, yellow, and soft pastel colored subjects when strong light would kill texture. Keep in mind the old rule: dark colors absorb light, light colors reflect light.

The meter reading should be taken from the key flower of the composition as close as possible since it will be the center of interest.

There are only two rules to keep constantly in mind: First, simplicity should be the keynote of composition; second, proper lighting will make the picture, light being the means by which we see and distinguish colors. Never be satisfied with a standard procedure, as you will find every flower requires a different technique.

# Retouching 35mm Slides

LOUISE FULTS AGNEW

To GET RID of that nasty bright spot near the edge of your picture, to give tone to pale blue skies, to provide clouds or smoke on those gray, overcast days, to heighten and glorify the orange-red of a backlighted leaf in autumn, try your hand at elementary slide retouching—or "slide painting," as I prefer to call it.

Materials needed are simple and not too expensive. And, with a little practice on some of those discarded transparencies, almost anyone can master slide painting sufficiently to rescue color shots which otherwise would be candidates for the judges' red lights. Often the removal or addition of, say, a highlight means the differ-

ence between acceptance and rejection in an exhibition.

For working on 35mm transparencies, I use a Bausch and Lomb magnifying viewer—a piece of equipment which has a picture compartment large enough for free use of brush and dye. Other equipment and materials are as follows: (1) a glass of clean water; (2) several clean linen handkerchiefs (Old ones are best!) or similar lint-free material to use in wiping brushes and slides; (3) ordinary silver-foil masks on which slides are taped for actual retouching; (4) two water-color brushes, a very tiny one for spotting, and a larger one, about No. 3, for washes (When buying brushes, get red sable if possible,

and test each brush to make sure the hairs spring back into place when bent); (5) a simple palette such as a white plate or piece of white tile; (6) Webster dyes, available either in kits or in individual bottles with

medicine-dropper tops.\*

When you're buying Webster dyes, the first colors you'll need will be warm-black 1A, blue 1D, blue-green 1C, red 1B, and yellow 1B. Orange 1A, light-green 1A, darkgreen 1B, brown 1A, and flesh 1A are handy to have, also, but approximately the same hues can be blended from the primaries.

A good palette arrangement is to put yellow in the upper left corner, with the other warm colors-the oranges and the reds-consecutively right. Cool colors, the blues and greens, may be placed vertically below the yellow, with warm-black in the lower right corner. This arrangement leaves most of the palette free for mixing.

In slide painting, I prefer to work on the emulsion side of the transparency. If the slide is a Kodachrome, it will be necessary first to remove the protective lacquer coating; otherwise, a "measle" effect results. Before removing the lacquer, I take the slide out of its readymount and tape it to a silver-foil mask to avoid leaving a noticeable linear frame where the edges of the readymount come.

While there are several ways to remove lacquer, perhaps the simplest is to wet a small piece of cloth with saliva and gently wipe the slide in one direction until the lacquer disappears. Avoid "scrubbing" the transparency, or you may take off the emulsion, too!

The best general working procedure is this: Dip the brush in clean water, wipe one way on clean dry cloth, touch the tip of the brush to the desired color spot on the palette, "side-swipe" the brush one way on dry cloth, and paint briefly. If you need blended colors, do your mixing in the center of the palette. When a diluted hue is required, omit the "side-swipe" before painting on the slide.

Now, clean the brush and lightly wash the slide. If the picture seems exceedingly moist, with a soft, damp cloth lightly wipe the surface in one direction. Mistakes or too much color are generally easy to correct by placing the transparency under a gently dripping faucet; most hues disappear shortly. Or Webster photocolor remover can be used according to the manufacturer's directions.

In giving tone to pale-blue skies, turn the slide sidewise with the sky area to the right. Using a wash brush full of diluted sky-blue color, begin on the right and stroke from top to bottom. In this case, don't wipe excess color from the brush before tinting. The uneven strokes will resemble cloud formations, and the upper sky will be darker because you have applied more color to that area.

To brighten overall flatness, and to give more "snap" to a slightly underexposed slide, a yellow wash over the entire transparency often helps. The yellow gives the picture some luminosity and seems to enhance shadow detail.

Unwanted bright spots, such as a highlight in green foliage, are simple to remove. Follow the general working procedure explained earlier; touch the tip of the brush to red dye, side-swipe, and touch to the highlight. Be careful not to overlap the red dye to surrounding green foliage. Then wash the slide slightly, dip the brush in clean water, side-swipe, touch to blue-green on palette, side-swipe, and touch the highlight with blue-green. Be careful, for these two colors tend to run. Then clean the brush and wash the slide.

On one occasion, late in the Fall, I photographed a bunch of backlighted orange-red leaves against a rather dull gray-green background. To "glorify" the leaves, the rest of the slide was given a wash of thin green—using the principle of complementary colors to heighten the impact of the center of interest. Similarly, in photographing an orange-red picture hanging on a neutral tan wall, I tinted the cast shadow of the picture frame blue. The addition of a complementary gave the picture a three-dimensional quality that had been entirely lacking before

it was retouched.

If, say in a factory or train or steamship shot, you need more smoke to balance the compositional arrangement of the picture, work warm-black 1-A quickly into the blue sky surface, rapidly wash the slide until the sharp paint lines vanish, then coat the darkened area with yellow, and wash again. Repeat for darker smoke, being careful, however, not to let the yellow overlap into the blue sky -since the resultant green would be annoying. If the smoke effect seems too angry, tone it down with a gentle wash of blue 1-D. In all smoke painting use a circular brush motion, rather than straight strokes. It should be mentioned, alas, that smoke has at least two dozen hues and values; existing smoke should be matched carefully.

Clouds can be produced in an overcast gray sky by using a similar procedure: diluted warm-black is applied to the desired area with a circular brush motion, washed rapidly, coated with diluted yellow, washed again. Here it would be wise to experiment with a similar gray area on a discarded slide to find what combination produces the effect

most pleasing to you.

Dusk pictures, where the prevailing colors are blue and blue-gray, often can be enhanced by touching up electric lights with a tiny drop of yellow. In one of my slides the center of interest was a ring of lights around the dome of the capitol building in Caracas, Venezuela. Using my tiny spotting brush, I placed a bit of yellow on each light to produce an exciting, three-dimensional quality. Here, instead of washing immediately, I put the slide aside and washed it later after the color was thoroughly absorbed.

Many other suggestions for mixing colors, and for matching colors to produce flesh tones, various hair shades, wood and metal effects, foliage and grass greens, wine colors, etc. are contained in the instruction leaflet avail-

able on request from Webster Brothers.

Why not try your hand at "slide painting"? It is fascinating and not at all expensive. Once you master the basic procedure, you'll find many a slide in the "reject" pile that can be salvaged. But learn to use your materials first. Remember, slide retouching is like living in a glass house. Every tiny step shows!

ABOUT THE AUTHOR-

Louise Agnew is a leading color exhibitor, an artist and professor of art. A member of Chicago Color Camera Club, she has won the Vanden "Slide-of-the-Year" Trophy and the President's Award at that club twice in succession. In art exhibitions she has won awards for still life and ceramic sculpture, and has exhibited widely-including the Smithsonian Institution in April,

Mrs. Agnew holds a master's degree in art education, and for six years was director of the department of art at Huntington College, Huntington, Ind. Currently she is working toward a doctor's degree in art education.

THE EDITOR

<sup>&</sup>lt;sup>6</sup>For price lists, color charts, etc., write to Webster Brothers, 53 W. Jackson Blvd., Chicago 4, Ill.

## DESIGN AND LIGHTING MAKE THE PICTURE

PEARL E. SCHWARTZ

E VERYTHING we look at has a basic simple design. By concentrating on a small part of an ash tray, glass dish, or French curve, you can photograph simple lines and curves that are pleasing and at the same time have good composition. By using the warm colors such as amber, red, orange, or shades of magenta to emphasize the dominating pattern and the cool colors such as green, blue, or grey to bring in the secondary design, you can control at will the pattern the eye should follow.

My Kine Exakta enables me to get within 1½ to 2 inches from the subject. All of the design and abstract slides I take are 1½ to 5 inches away from the subject. Everything is photographed on a 16 x 20 inch piece of plate glass (the kind used in windows—or any kind as long as it is glass). This is placed on two card tables, leaving an opening for the light to come up from underneath. The glass is covered with a piece of cellophane (any color desired) but I like to use a light shade of green if the key pattern is going to be highlighted with a warm color. I use an amber sheet if I want to emphasize the dominating pattern in a cool color. By combining the use of cool and warm colors you secure depth—at least the feeling of depth, as warm colors come forward and cool colors recede.

By using the glass as a base with the light coming up from underneath all of the bottom area of the slide is softly illuminated, and you avoid dark, heavy shadows at the base.

The lights used and their placement are in my opinion the most important things to consider—after the subject material, of course. I never use a white light. My lights are No. 2 Photoflood medium beam GE bulbs. Over these I snap colored glass filters. The light metal frames and glass filters can be purchased in most hardware stores or theatrical equipment suppliers. The glass is interchangeable and can be secured in the basic colors—red, green, amber, and blue. Smaller sizes of glass can be obtained,



Set-up for Taking "Radiating Lines"

also. I have red and blue in the smaller sizes and I slip this smaller glass in front of the Dinky spot sometimes when I am striving for a certain effect, such as a cool, warm, and cool color combination. Perhaps this sounds confusing so let's analyze the setup in Figure 1.

This is the actual setup of "Radiating Lines," which has been exhibited in shows around the country. The glass funnel is on two sheets of amber paper for very warm tones. The two medium beam lights to the right and left of the camera are blue and green. The blue at the right is about six inches farther away (because of its deeper color) than the green on the left. The little Dinky spot has a green filter. The cool lights in front, the very warm amber tones in the center coming from the light underneath shining on the back of the funnel with a cool color are dynamic. It has impact and movement, not only because the simple pattern of the lines of the funnel and the circles of the spring oppose each other but also because of the color combination.

Notice how sharp "Radiating Lines," Figure 2, is throughout. One of the most important points to remember in table tops is that the first thing the eye sees must be sharp and in focus. To me, the entire picture has to be sharp to be pleasing. I never take a picture indoors unless the camera is stopped down to f/22. This is as far as the Kine will go. In other words I use 8, 10, 12, 20, and sometimes 30 seconds for pictures because I want to stop down all the way. This, as we all know, gives depth of field and lovely detail throughout.

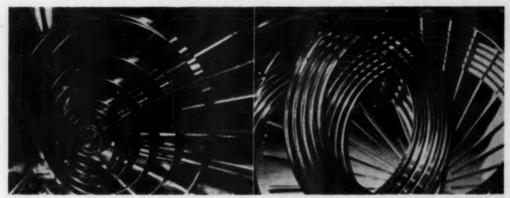
I always work with one particular piece of material until I have explored all of the possibilities with it. In other words, I used springs in some of my slides. I took about thirty pictures of the springs, combining them with various objects. By working with them continually I could avoid the hot spots and other troubles you have when photographing metal. I experimented for about an hour placing the lights at various angles. I discovered what I could do with the lights and at what angles they could be arranged. From that time on, it was a simple matter to photograph the material.

The picture reproduced in Figure 3 was one of the thirty. Here a light is coming up from underneath. The cellophane was green and the key lights in front were amber—very close at the left as indicated in the setup given previously—and a red light, diluted by moving the light on the left about two feet farther back than shown.

#### ABOUT THE AUTHOR-

Pearl Schwartz, a leading color exhibitor, has won many medals and ribbons—both in exhibitions and Color Division competitions. Her slide, "Simplicity," took a \$30 prize at the 1930 California State Fair exhibition. She is a member of Chicago Color, Nature, and Green Briar camera clubs in Chicago; and is a member of the board of directors of the Chicago Area Camera Clubs Association, whose 1951-52 color competition she will conduct. She has lectured and demonstrated her technique frequently to clubs in the Chicagoland area.

THE EDITOR



RADIATING LINES

Pearl E. Schwartz

DYNAMIC CURVES

In other words, you can control the tonal values of the colored lights by moving them closer or farther away from the subject material. In this picture the lights are arranged to give a "rainbow" effect on the spring alone, but because of the light coming up from underneath through the green cellophane, the pattern in the glass has an overall feeling of pale green. Here the basic composition is strong and simply was painted with color. This only proves what we all know to be true: a good slide must have sound basic composition to really go places in shows, with the color simply emphasizing the design.

The same thing is true, as far as I am concerned, when photographing outdoors. Concentrate on one interesting thing close up, rather than photographing the entire land-scape. Landscapes can be different and beautiful if taken

from six to nine in the morning and after six in the evening. I usually take dunes pictures from about seven in the evening on.

Pattern shots outdoors are just as plentiful as those you can set up indoors. A different angle or viewpoint is what rings the bell in shows—if you are striving for acceptances. The successful dunes pictures I have taken have been pure pattern—a very small part of the landscape with the sun very low, highlighting the grass and a few ripples in the sand. Sounds like old stuff but it isn't because of the angle and the backlighting. My point here is simply to emphasize the importance of lighting and angles if you are striving for unusual slides.

I use the same ideas on lighting outdoors that I have found to be effective indoors, back and side lighting.

## BLACK AND WHITES FROM COLOR THE EASY WAY

ROBERT S. BEESE\*

How MANY times have color slide photographers asked, "Why didn't I take that shot in black and white too?" How about those prize slides of yours, did you get black and whites of the 2x2's that won international recognition in the color slide shows? Many times we don't have time to set up for both black and white and color, and we don't realize that that gorgeous, gayly-colored scene will make a good black and white also. As a solution I have developed an easy, quick method of producing good black and whites from color slides.

In the Photo Service at the Pennsylvania State College we are constantly asked to make black and white glossy prints from 2x2 color slides. Most of the Extension staff use 2x2 slides in lectures and demonstrations throughout the State. In addition, many publications originate at the College in the form of bulletins and pamphlets dealing with all phases of agriculture, home economics, etc. Needless to say, pictures play an important role in these publications and many times the only pictures available are in the form of 2x2 color slides. So we are faced with the problem of making good black and white, glossy prints for publication from them.

<sup>†</sup>Many of the illustrations appearing in this Color Division Feature were made by Mr. Beese using the method described herein.—The Editor.

<sup>\*</sup>The Pennsylvania State College.





TURKEYS AND PASTORAL SCENE

R. S. Beese



STRAWBERRIES

R. S. Beese

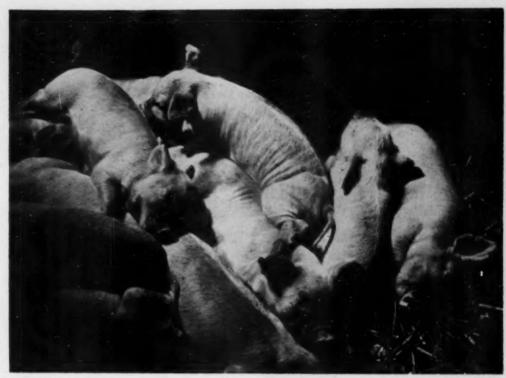
We started out with the usual procedure of using Panatomic X in a standard DK50 developer, projecting the slides in the enlarger on a sheet of film loaded in a sheet film holder. The results were good but we had little control. One of the biggest problems is to reduce the contrast of the color slide so that a reasonable number of tones can be printed on the paper. We experienced some difficulty determining the correct exposure and developing time, and we couldn't tell if we had a printable negative until the film was completely developed and partially fixed.

One day I tried using Kodak Commercial Sheet Film. This was a rush job and I had a tray of Dektol mixed 2:1 at 70° so I developed the film under a red safelight for 2 minutes and behold, it was an excellent negative. So from then on, we have been using that system for making most of our black and whites from 2x2 color slides. Over 90% of the color slides that come into our studio for black and white prints, have been made by this method. There are some slides that require a Pan film, but most of them do not.

The accompanying picture of the strawberries is an unretouched black and white from a 2x2 Kodachrome original. Here we have bright red berries, green foliage and yellow straw. According to "the book" the red berries should print black on a color blind film and the yellow straw should go dark grey. But the monochromatic values appear correct in this print and I doubt very much if one could tell the 8x10 glossy from an original black and white.

Perhaps the explanation for this strange behavior of a color-blind film is the fact that most colors in our slides are not pure colors and where there is fairly good contrast in adjoining areas, regardless of color, the Commercial film will record these differences.

In making a negative use the largest size sheet film that your enlarger will accommodate. The larger the negative, the easier will be your job when it comes to spotting out those minute dust specks that adhere to the color slide. Or perhaps you are going to remove some unsightly telephone wires or a dead branch, in which case, the larger the film, the easier your retouching will be. I have made many black and whites from 2x2 color slides where I did no spotting or retouching of any kind, so don't let the mention of it give you the impression that a lot of work on the negative is necessary. The main thing is to get all



AFTER DINNER NAP

R. S. Beese

the dust off the original, then you won't have to retouch. In addition, the larger the film size, the more control you will have in the use of New Coccine to lighten those shadow areas. The possibilities are unlimited if you use 4x5 film or larger. Shadow areas that tend to print too dark will become transparent with the addition of New Coccine. Wires, scratches, dust specks, etc., can be opaqued or spotted on the negative and further spotting can be done on the print with the greatest of ease.

The procedure for making black and white prints from a color slide is as follows:

 If the color slide is bound in glass and free from dust inside, use it that way. It is not necessary to remove the film from the mount. Dust the slide carefully on both sides with a camel hair brush and blow off the remaining dust with a syringe—not with your breath, as you are likely to blow moisture on the film.

2) Place the slide in the enlarger, emulsion side up. I use an Omega enlarger and place the slide on one half of the 35mm carrier and lower the lamp housing carefully on the slide. With an enlarger using the slip-in type of negative carrier, tape the slide to one half or put the slide in the glass sandwich.

3) Take an empty sheet film holder, the size you intend to use, and slide a sheet of white paper in the holder in place of the film. This will be your focusing target. You

will need at least two holders, one to serve only for focusing.

4) Place this holder on your enlarging easel and slide it into the upper left corner squarely. Move the easel to position the slide image on the focusing target. In this way, when you substitute the holder with the film, the image of the color slide will fall in exactly the same place,

5) Focus the slide on the white paper. It isn't necessary to fill the entire area of the film. I prefer to leave a border so that I have a check on the light leakage from the enlarger. If the film is clear on the extreme edges where' it slides under the grooves of the holder, but is greyed between this area and the picture image, then you are getting light leakage from the enlarger and will have to take steps to correct it.

6) For your first exposure, try stopping the enlarger lens down to f/16 and give an exposure of 10 seconds for Kodak Commercial Sheet Film.

7) Develop the film 2 minutes in Dektol diluted 2:1 at 70°. If the developer has been ripened by previous use, so much the better. You will get a less contrasty negative. I use a Series 0 safelight and shield the enlarging easel and developer tray from its direct rays with a large sheet of cardboard. In this way, there is plenty of light in the darkroom and it is perfectly safe if shielded.

8) Rinse in standard short stop and place in hypo to

fix. I use trays throughout and prefer to wash the films in hangers to prevent scratching and insure thorough washing.

9) After washing, rinse for 1 minute in Photo-Flo.

 Swab both sides of the film with cotton wet with Photo-Flo and hang film to dry.

Thus, in ten quick steps you have produced a good black and white negative from a color slide, with a minimum of effort, and best of all, the complete operation has been carried out under a bright safelight.

When it becomes necessary to use Pan film, I prefer Pana-

tomic X, exposing for 5 seconds at f/22 and developing for 2 minutes in the same developer, Dektol 2:1 at 70°. Exposure and development will have to be carried out in complete darkness, of course, but even at that, in just 3 or 4 minutes you will be able to tell if you have a good negative or not.

All accompanying illustrations were made using the above method on Commercial Sheet Film, 4x5 in size. The negatives were enlarged to 8x10 on Brovira glossy. New Coccine was not used on any of the negatives; all are straight prints. Some spotting of dust specks was done on the negatives and prints.

## OPERATION COLOR CAMERA CLUB

KARL A. BAUMGAERTEL, APSA\*

W ITH AN ever-increasing interest being shown in the formation of color camera clubs and of color sections of established black and white clubs, there has been a considerable demand for some plan or ideas to be used in connection with the formation of such units.

Rather than to outline a theoretical set-up or to give disconnected or untried ideas, we feel it will be more practical to give you the actual plan used by a major, long established, highly successful club. Because it is so complete and well done, we have selected the outline of color division activities of the Oakland (California) Camera Club which follows:

Meetings are held on the third Tuesday of each month in the Auditorium of Chabot School. The first hour is usually devoted to showing a travelogue or other outstanding sets of slides by members or invited guests. From time to time there are illustrated lectures on color slide photography by outstanding workers. International color slide exhibitions are shown once or twice a year.

After a short intermission following the first hour's program, the second half of the program is devoted to the regular monthly contest in which members submit two slides each. During the year there are in addition to the monthly contest four special contests. The slides entered for the monthly or special quarterly contest are usually previewed by a competent judge in a back room during program hour. After the intermission these slides are projected in the main room with comments by the judge. Winners and honorable mention slides are announced. The exhibition committee enters winning or honorable mention slides in national PSA competitions, Northern California Council of Camera Clubs monthly contest, and other competitions. Many club members enter slides in international exhibitions, and for the year 1950-51 a number were listed in "Who's Who in Color Slide Photography."



PORTRAIT

Eleanor Taylor

#### The Color Division Committee

The color division committee, meeting every six weeks, plans and carries out the various activities of the color division. This committee of thirteen is appointed by the chairman of the color division and consists of the following: chairman of color division, slide secretary and assistant, projectionist and assistant, exhibition committee of

\*All illustrations are by members of the Oakland Camera Club.



DUNES

John Siipola

three, judging arrangements with chairman and two assistants, membership and hospitality, delegate to Northern California Council of Camera Clubs, and other members as deemed necessary.

#### Rules for Color Slide Competition

- 1. Members in good standing may enter slides.
- Color slide contests to be held monthly. In addition there shall be four "Special Quarterly Contests" as follows: July, Abstractions; October, East Bay Pictorial; January, Still Life; and April Poetraits.
- 3. Entries limited to two 2 x 2 color slides for each member for each monthly contest and in addition two slides for each Special Quarterly Contest.
- Every color slide must carry: a) Name of maker, b) Thumb mark (lower left corner as viewed), c) Title of slide.
- During the year 1951-52 there shall be two classes, "A" and "B" in each monthly contest. In the four Special Quarterly Contests one class only.
- Advancement from "B" to "A" group to be made only after end of year, at which time the selected highest point winners shall be advanced to the "A" group.

- Color slides winning places in monthly or Special Quarterly Contests may not be entered again during the year or following year in a monthly or special contest.
- Color slides entered in monthly contests or Special Quarterly Contests that do not win points may be entered only twice during the year.
- Color slides may be entered regardless of when they were taken.
- 10. All point-winning and honorable mention slides in monthly and Special Quarterly Contests shall be available to exhibition committee to use in club contests and exhibitions; all slides entered with this understanding.

#### Points for Contests and Outside Activities

Points for monthly contests (both A and B) are: 1st) 5 points, 2nd) 4 points, 3rd) 3 points, 4th) 2 points, Grand Award (Best slide of A or B group) 1 point.

Points for outside activities: winning place in Northern California Council of Camera Clubs monthly contest, 1 point; PSA club contests, each slide entered, 1 point.

Special Quarterly Contests (no group divisions): 1st) 5 points, 2nd) 4 points, 3rd) 3 points, 4th) 2 points, 5th) 1 point.

Award for monthly and Special Quarterly Cortests: 2 x2 printed awards for each winning place; five honorable mentions



SEASCAPE

Bill Wasson

for runners-up in each "A"-"B" group and Special Quarterly Contest.

Final prizes at end of year are given as follows: Accumulating greatest number of points during year (each group) 1st-2nd-3rd-4th-and 5th prizes; Best Slides of Year: 1st-2nd-3rd-4th-and 5th prizes and 10 honorable mention awards. Selections to be made by judge or judges from the point-winning slides during year in A, B and Special Quarterly Contests. Prize-winning slides to be shown at annual dinner.

While the foregoing has been satisfactory to the Oakland Camera Club and could be adopted by any club "as is," it is likely local conditions may warrant some changes. A good example would be in connection with the club slide competitions. Beginning or small clubs might not have enough entrants to warrant splitting the com-



FIRST SNOW

Bill Wasson

petition into two groups. In such case one group would be sufficient.

In the material quoted there are several items that should possibly be amplified. For instance, notice that meetings are held in a school auditorium. Schools and public libraries are often possible meeting places. Space can usually be obtained at no cost except possibly for some small reimbursement to cover cleaning up after the meetings.

A little explanation of the plan used in connection with the judging of the monthly competitions will be of interest not only to new clubs and new color sections, but also to established clubs. The plan used by the Oakland Camera Club has proven to be unusually popular and has greatly increased the amount of time available for other activities. It was originated some years ago after the club had a run of judges who had trouble making up their minds as to their selections when slides were being run for them in the presence of the club. This resulted in the slides being run repeatedly which, as can well be imagined, was rather tiresome to the audience. To get away from the repeated showing of the same slides and to remove pressure from the judge, the Oakland Club conceived the idea of supplying the judge with space in another room, his own projector and screen, an assistant to project and to do the recording and a light box to allow the judge to look at a group of slides at one time. This allows the judge to take his time in making his decisions and it also permits other program features to go on while the judge is doing his work. When the judge has finished his job, the slides are brought into the main room where they are run for the members, with comments by the judge, and the winners announced. So successful has this proven that a number of other clubs in the San Francisco Bay area have adopted the same plan with equal success.

It will be noticed that the Oakland Camera Club competes in the PSA inter-club and other inter-club competitions. While not every new club may have a regional camera club council available, the PSA Color Division camera club competitions and activities are available to

The color division committee outlined is for a large club. For a smaller club, this can be considerably smaller.

The Oakland Club is rather liberal in allowing winning slides to be entered again after the second year. Most clubs exempt winning slides indefinitely, which is to be preferred. Anyone who can't make some new slides in two years, doesn't deserve to win again on an old slide.

Rule 10 is quite important for clubs that want to compete in inter-club activities. If this rule is not established the committee chairman may have trouble in gathering slides to be entered. The awarding of points for participating in inter-club activities is a big help. Some clubs also give points for members' slides accepted in the international exhibitions recognized by the PSA Color Division.

In addition to the activities outlined the Oakland Camera Club holds outdoor field trips at regular intervals. Every new club should provide for these in their plans.

The writer has always found the Oakland Camera Club to be most hospitable. Should any of our readers be in the San Francisco Bay area on the third Tuesday of any month, we are sure they will be made welcome and will be given the opportunity to see for themselves how well the above works out. Meetings are held in the Chabot School, Chabot Road, Oakland, California. If you need directions, phone the Secretary, Merritt H. Brady or Mrs. Brady at Audover 1-6220.

A LL OF US who are interested in color photography may find that, because of a belief we have explored all possible outdoor material, our interest wanes. When we reach this point, we can often find a new interest in still life or

table top photography.

The pleasant feature of still life photography is that it can be enjoyed at any time of the year without reference to outside weather conditions, and the photographer has complete control of all of the elements entering into a successful picture or slide. Many times when photographing outdoors, we find that the result would be better could the light be altered. This is entirely eliminated in still life photography. We can place our light to give any desired effect; we can use any material that permits us to present our ideas in interesting pictorial fashion.

The basic equipment requires a minimum of expenditure, and the materials required are easily obtained. We need background material as well as foreground material, and this can consist of draperies, colored show-card stock, or any other material that may prove suitable for the particular type of picture, such as sand, salt, bits of stone, twigs, etc. In addition, two or three substantial, but not expensive, light standards are required as well as a gooseneck type of lamp for throwing light on the background to assist in obtaining separation of planes.

With reference to lighting equipment, light standards can be obtained at reasonable cost, and the photographer has considerable choice with respect to the type of lamp to use. I prefer the Par lamp, which is marketed by several large electric companies. The cost is approximately \$1.75 each, and the lamp is good for six to eight hours of continuous use. Or, you may use Photofloods with reflectors, or normal Mazda bulbs. The Par lamp can be obtained as a flood or a spot, in either clear or frosted glass, and the lamp itself has a built-in reflector.

Colored show-card stock, which is available in any art store, and in practically any size desired, is one of the most effective and least expensive types of material for background and foreground use. It also wears well, which is an important consideration. I suggest that you purchase the cards in harmonizing colors; that is, dark blue and light blue, dark green and light green, etc .-- for we will wish a darker tone for the base, and a lighter toned background. The size should be such that you have coverage for your particular lens so that you will not be taking in any wall area which will impair the composition. The card may be suspended from the ceiling, or from the wall with the use of clamps and cords, and the foreground card need only be laid on top of the table on which you propose to make your setup. With respect to the distance of the table from the background, you will find this is an important consideration. With proper ratios the light on the fore-



THE FAN

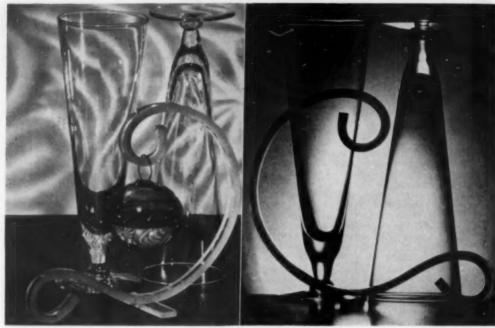
C. R. Emanuelson

ground and on the background can be coordinated so that the relatively limited latitude of color film will not be exceeded.

In the photographing of glass objects, which in itself is a very interesting project, good photographs can be made utilizing only one light source. The light should be placed below the level of the table and the beam projected on the background material. By coordinating the distance between the background and foreground, we can obtain some spill of light from the background onto the foreground, and bring the ratios of intensities within the latitude of the film. In photographing glass, I like to use a light blue background, with a darker blue foreground. The darker foreground creates the necessary stability to support the picture when projected, and the lighter-toned background assists in creating aerial perspective.

## STILL LIFE FOR FUN

C. R. EMANUELSON



GOLDEN GOBLETS

C. R. Emanuelson

TRANSLUCENT DESIGN

In making a still life, we should recognize some of the common faults; camera angle, lighting, arrangement, focus, color harmony, and unity and clarity of our message. All are closely integrated and are not necessarily listed in the order of their importance. You will see in Figure 1, made for demonstration and talks before camera groups, all of these faults. The background has a very definite pattern and, as a result, is obtrusive and becomes an overpowering factor in the picture. Also, because the choice of colored stock, which in this case was gold, was not judiciously made, we have tonal mergers, and have thus lost aerial perspective—our light also having a yellow cast to it. Furthermore, the background is too close to our material and, again, we have impaired the feeling of aerial perspective.

The camera angle employed is much too high and results in the background line of the table cutting into the subject and dividing it into light and dark areas, making for an unpleasant reaction. The arrangement of the material, which consists of two glasses and two other plastic objects, is cluttered. We have point mergers, and a general feeling of an arrangement that is unsatisfactory. In this example, we also utilized a front light, and this has created a considerable number of reflections which are disturbing elements and do much to destroy the feeling of good arrangement.

For comparison, observe the effect obtained in Figure 2.
"Translucent Design" or "The Fan." "Translucent Design" was made with the same materials as in the first example, except that the plastic ball was eliminated. In lighting "Translucent Design," only the background light was used.

Attention was paid to the distance separating the background and foreground and, as a result, we have better aerial perspective. By careful lighting and choice of colored card stock, in this instance blue, we have further enhanced the aerial perspective and eliminated tonal mergers. The camera angle is low enough so that the material achieves the dignity and clarity necessary in pictorial work. The texture of the material has been well rendered as a result of the improved lighting, and all point mergers have been eliminated as a result of careful placement of objects.

Glass is only one of many interesting materials that can be photographed. The field is unlimited; the possibilities range from the conventional to the bizarre and the unusual. The material can consist of transparent or opaque objects, each of which will require a different type of lighting. Such things as springs, plastic ornaments, ornaments of all types, wire shapes, light bulbs, practically anything you may think of, can be put together for an effective photograph.

If you have never made a still life before, you will find that you will become much engrossed with the possibilities. Some of its problems may give you difficulty, but in the process of mastering each in turn, you will eventually achieve an ease of operation which will permit you to use your imaginative qualities to make a photograph that is unique and, in many instances, the type of photograph that you alone can make. Stated another way, after you have mastered the technique, you will then be in a position to do fully creative work, which is by far the most interesting type of photography.

## THE CHARM OF THE MINUTE

ALFRED RENFRO

Most of Us are unduly impressed by the "BIG." Big objects of all kinds, big animals, big prints, as well as big names. A contact print made from a 35mm negative will hardly attract attention although it may be an excellent picture, but blow it up to a 11 x 14 or larger, and it will fairly knock their eyes out. The most exquisite things in the world are small. Nature used more skill in creating a ruby-throated humming bird than she did in making a long-legged ostrich; a golden-eyed lacewing fly than a bulky hippopotamus; a small, brilliant tropical fish than a hundred ton whale.

The most interesting of all living creatures are found among the insects around us. Among them are the most grotesque creatures on earth as well as the most delicate and beautiful. Some are ogres and nightmares, others are

exquisite fairies.

To the photographer, especially the color worker and nature lover, here is a new world, a near frontier, a thrilling adventure, surprise, and pleasure. Look in the grass at your feet, under the leaves, in the flowers, and in the air. Beneath your magnifying glass you will see beetles that are living gems; winged creatures with iridescent, lacelike wings that reflect all the glory of the spectrum, changing with every movement.

You will have no trouble in seeing the larger creatures, such as butterflies and moths, but you must look for the delicate details in their antennas, their eyes, and the minute scales on their wings like the feathers of a bird.

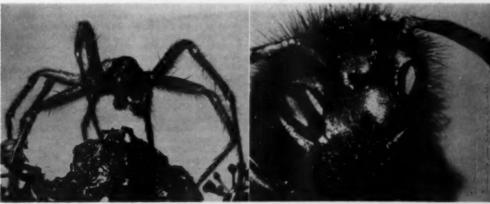
How can we photograph the creatures of this strange world? There are several ways and it depends on what kind of camera you have or will use. You can use a miniature camera if it has a behind-the-lens shutter and interchangeable lenses, or a view camera with extension bellows. The camera should be one that can take life-size and enlarged pictures. If the bellows of your camera are not long enough, you can extend the lens by using a tube.

For small subjects, I use an old view camera with a 16 inch bellows, ground glass focusing, and a revolving and tipping back. To this I have attached a Bantam camera back and ground glass in which I can use 28 x 40mm color films. You can buy 35mm backs which fit on certain cameras but you can get a back and fit it on your camera yourself. With my outfit I use a 2, 5½, and 6½ inch lens. With the 6½ inch lens and bellows extension of 13 inches, the subject will be life size on the film. With the 2 inch lens and bellows extended 16 inches, the subject will be seven times life size.

In extending the lens from the film the exposure increases. With a two-inch lens 16 inches from the film exposure is increased 60 times normal. With artificial light and color films having a rating of 12, and with a meter reading of 50, a normal exposure at f/16 would be one third of a second, but with the two-inch lens 16 inches

from the film it will be 20 seconds!

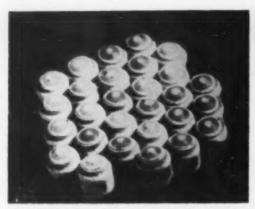
Tables for this may be purchased at camera shops, or you can figure them out yourself. I use a Weston meter and my method is as follows: Take a reading of the subject. Say it is 50 and your bellows extension is 14 inches, and you are using a 5-inch lens. Find f/14 on the inside row of your meter. We will call this the 14-inch bellows extension. Now note the figure just below it on the meter. It is 1/3. Locate f/5 on the inside row of your meter. We will call this the focal length of your lens, 5 inches. Turn this 5 until it is just above the 1/3,



WOLF SPIDER

Alfred Renfro

HEAD OF YELLOW JACKET



"PIXY POTS." Eggs of insects on under side of Blueberry leaf. The eggs are quite small. When youngsters are ready to come out, the lids fly open and the young "bug" pops out.

adjacent to it. Now every reading on your meter is correct for the light, bellows extension, and lens. You can use 1/6 of a second at f/3.5, 1 second at f/9, 3 seconds at f/16, or 13 seconds at f/22, and any aperture and time between. You will also note that the light indicated on your meter now is not 50 but 6.5, the correct amount of light reaching the film. This may sound complicated to read but it is simple to do. Try it with your meter.

If you wish to use a regular 35mm camera, you can photograph some of the larger insects, such as butterflies, by using a "slip-over" lens and a focal frame. One of the advantages is that exposure is not increased but the subject is not life size, or larger, on the film. It will be nearer quarter natural size. I use three different slip-over lenses, (which are also known as positive, proxar, supplementary, and portra lenses,) a 1+, 2+, and 3+. Also, I use the 2+ and the 3+ together, making 5+.

You can also obtain 8+ and a 10+ spectacle lens. The plus sign indicates the diopter power of the lens. A 3+, for example, has a focal length of 1/3 of a meter or about 13 inches. The 10+ will cover a field of 1½ x 2½ inches, but the depth of field is only 1/5 of an inch. The 3+ takes in a field of 4½ x 6½ inches with subject 10 inches from lens and with scale set at 3½ feet. This is satisfactory for butterflies and grasshoppers, especially if some foliage is included in the picture. The depth of field will be about 1¾ inches at f/16. By placing the 2+ over the 3+ I cover a field as small as 2¾ x 4½ with scale set at 3½ feet and with object 6½ inches from lens.

The focal frame is made of wire and extends in front of the lens and indicates the focal distance and the field being covered, serving as a view finder as well as a range finder. Focus and field should be tested when camera is empty by placing a piece of ground glass in the position occupied by the film. The frame I use is adjustable from 6 to 20 inches from lens to subject, and covers a field of 4 to 14 inches wide. More information for making and using the focal frame and portra lens may be secured from the Eastman Kodak Company at no charge. Ask for Bulletin B10, "Portra Lenses and Technique for Closeups." Also bulletin on "Flower Pictures in Color."

One of the most difficult problems is to get a correct

meter reading and calculate the exposure. The next is to keep the "critter" quiet while you focus and make the exposure. As for the meter reading, if you use the same size lamps and reflectors and have them placed in the same relative position, you will learn from experience about the amount of light you have. If the insect is so small that it is impossible to get a correct reading of it, you can replace it with some larger object which has the same color and reflective value, such as a leaf, and take a reading from this. Recently, I have been using an Eastman "gray card," and I believe it is the answer. Also take a reading of your background. Moving it closer or away will make it lighter or darker and sometimes it is best to light it separately. Use a suitable color and place it far enough away to be out of focus.

As for making the insect stay put, it is almost necessary to dope him, unless you are using flash. Even with flash and a long bellows extension and a small object, the calculation is difficult, as you have to convert your light into distance of flash from subject figured on lens aperture and distance of lens from film. With a No. 5 bulb, 15 inch bellows, 6½ inch lens, the exposure is increased six times, and instead of the flash being five feet from the subject at 1/50 second with a CC15 filter, it must be two

feet from the subject.

The best solution is to place the insect in front of the camera and give it a whiff of chloroform. You can also place it in the refrigerator for a while but the floods will soon warm it up and he will be on his way. If you are photographing the head of an ant, a movement of 1/16 of an inch will move it entirely out of the picture. A tripod is not so good. I have my camera fastened on a sliding stand with sliding background, and adjustable platform for the insect. Rigidity is a must.

Now place your "bug" in position on the platform and adjust your lights. The main light can be about 10 inches from the subject and a bit above; place the filler to one side and a bit below and 20 inches or more away. If you wish more contrast and texture, the main light can be placed more to one side and the filler nearer the lens. With No. 1 floods, this will give about 50 Weston reading. Other lighting can be used, back lighting for transparency, top lighting for iridescence, side lighting for drama and texture, strong spot lighting for attention and drama. Incidentally, your slide projector will make a good spot for small objects.

I have made a gadget which operates the two lamps in series so lights are cut down for focusing and arranging. Also, they do not burn the insect or disturb him. After focusing, calculate your exposure, set your stop and leave your lens open. Turn out all lights except one shaded, to check your timing by. Be sure there are no strong lights on subject. Now pull out your slide, turn on floods full for time of exposure, say three to 30 seconds or more, then turn off your lamps, replace your slide and advance your film. In this way you have not touched the camera during the exposure. In such high magnification the working of the shutter or your hand on the cable release may create enough vibration to blur the image.

It is better to photograph the insect alive if possible. I have photographed many outdoors by sunlight, reflected light from a mirror, and flash. But close-ups and great enlargement is best done inside with controlled lights. Some spiders, for instance, collapse on being killed, like a deflated balloon, and nearly all insects draw up their limbs if killed which makes them look unnatural. With a

stiff rigor mortis it is very difficult to straighten their limbs out again. If you must kill the insect, you should understand their habits and be able to arrange their feet and legs in a natural way. This requires much control, a steady hand, as well as a keen eye. The insect will flop down, antennas will break off and legs will pull loose until your patience is about exhausted.

Some insects are more nervous than others. Spiders, while not insects since they belong to the crab family, are the easiest to photograph. They hang head down and will stay still even under flood lights. Ants have great tenacity and intelligence, while yellow jackets are high strung and die quickly in confinement or on being handled. The golden eyes of the moth fade quickly after death. Few insects will stand the heat of the lights, so they should not be turned on full until the last moment for the exposure.

I have said nothing about composition. That is your job. Through your own lighting, composition, and choice of subject you will create your own picture, the interpretation reflecting your own individuality. All I hope to tell you is of the tools I work with and some of the fundamentals and difficulties, and how you can avoid or overcome them.

Besides photographing the insects, the study of their habits, peculiarities, and intelligence, is fascinating. It will amaze you. Some are built upside down and inside out, their skeltons 'being on the outside and their backbone being under their bodies. Their blood is green or yellow instead of red. Some have ears on their elbows or knees, others on their stomachs. Some have as many as 60,000 eyes. A beetle can carry a load 850 times its weight. A man proportionally as strong could pick up and pack off 70 tons—140,000 pounds!

Among the insects you will find spinners, tailors, herdsmen or cowboys, carpenters, warriors, architects, undertakers, papermakers, balloonist, musicians, and weather prophets. Nine tenths of all living creatures are insects. The average size of all creatures in the animal kingdom, including the 100-foot whales, is the house fly. Among the insects are the most ferocious creatures on earth. Others are so amicable that they will give their life for their fellow worker. Some air condition their homes and keep the temperature at an even degree summer and winter. Others use disinfectants and are more sanitary than men.

Without insects we would have no fruit or vegetables, clover and many grasses. Without the grasses we would have no cattle, milk or beef. We would have no birds, inland fish, silk or honey. The perfume and color of the flowers were not made for man's pleasure but to attract the insects, for without the insects the flowers would perish.

It is generally believed that if it were not for the birds, the insects would take over the earth. The true facts are that the good insects destroy more pests than all the birds. Also, by pollination alone, the insects produce two and a half billion dollars in crops each year, and this is far from being all of the insect story.

Now you have photographed your insects and sent your film to the processor. Today the slides have been returned. You project them on your screen 300 to 600 times life size. The little lady bug is the size of a bath tub; the tiny damsel fly is three feet between the eyes! The thrill you receive from your trek in the insect jungle repays you for all the hard work and effort of bringing them back alive. You are seeing a new world that you hardly knew existed, a world of wonder, beauty and mystery.

## SUCCESS IN COLOR

PAUL J. WOLF, APSA

Success in international color slide exhibits is achieved by those who know what they are doing, and why!

The PSA Color Division's "Who's Who in Color Slide Photography" for 1949-50 listed 582 photographers who had been successful in two or more exhibitions, did not list another 779 who were successful in only one show, and merely mentioned the existence of another 1,200 who had entered, but had not been successful, in any exhibition at all. Since this is a total of approximately 2,600 individuals engaged in the "sport" of color slide competition on the international level, it might be profitable to examine some of the reasons behind success, since only about one person in five has so far achieved it. At the time this is being written, the figures for the 1950-51 season have not yet been completed and while there has been a large increase in interest in the color slide exhibitions, if this year follows the same pattern as has been set by previous years, the averages will be about the same.

By the time one feels he is ready to take on international competition, he should have a pretty good idea of what he wants in a color slide, and how to get it. A slide is on the screen, before the judges, for only 10 to 15 seconds in the larger internationals, so it must make an instantaneous impression. To insure that this vital impression will be made, you must take care that your slide is a picture. Good composition as a matter of course, unusual or at least interesting subject matter which you should seek to handle in an individual way, lighted carefully for the exact effect you wish, good color balance-all of these are essential for a successful exhibition slide. Your picture should have only one subject, for simplicity is a virtue, especially in the eyes of the judges. Careful cropping, when necessary, and framing for the best possible presentation is expected and will help any slide. International competitions are tough and taking advantage of every way to improve your slide



POT OF ONIONS

Paul J. Wolf, APSA

is merely being sensible. Don't hesitate to crop—better a small, good picture than the full frame filled with dis-

tracting elements.

The color slide exhibits have come a long way in the past few years, and many slides that did well in the early days would find it rough going now. The juries these days are sophisticated and expect to see more than a riot of color. Subjects which have been done and re-done tend to get short notice. This may not be entirely a happy situation but it is a condition that must be faced. Sometimes,

to get short notice. In may not be entirely a nappy stuation but it is a condition that must be faced. Sometimes, of course, the unusual treatment given a trite subject will redeem it, but such subject matter is usually best skipped, at least for competitive purposes. Water lilies and sunsets come into this class. Recently, there have been so many Grand and Bryce Canyon shots, most of them mere casual snapshots, taken because the brilliant color caught the eye of the shutterbug, that the Color Division has found it desirable to inform its members that the judges are not showing any great enthusiasm for these subjects. A year or two ago, the Division also warned against autumn scenes, in which the brilliant color alone was the entire

picture.

Choice of subject matter is important but the treatment accorded the subject is more so. By far the greatest number of slides seen at any exhibition are landscapes, and outstanding ones are always well received. Unusual weather conditions help these, lending mood, and the utmost care in composition, both spatial and color, is essential. Night shots in the cities, taking advantage of the reflections from wet streets on rainy nights, and just at dusk, showing the lights of giant office buildings against a still-luminous sky, do pretty well. Snow scenes, when well done, find acceptance, too. Good color portraits are at a premium, as are really good still lifes. Flower shots must in reality be portraits of the blossom to command any attention, and the use of appropriate artificial backgrounds to eliminate confusing details is highly recommended. Nothing spoils a flower shot so much as a spotty, jumbled background. Children and babies need very special technique, and family-type snapshots are a waste of time outside the family album, no matter how attractive or cute the subject may be. Pets, too, are difficult to handle but at least one man has made quite a reputation on his puppies and kittens. Perhaps the rarest of all are slides exhibiting humor. Any jury is glad to see these, but very few of real quality ever turn up.

Your four slides ought not to compete with each other.

The writer makes a point of sending slides with much diversified subject matter, such as a night shot, a landscape, a still life, and a marine. Since the average jury is composed of three or sometimes five members, diversification of subject matter gives you a better chance of appealing to the preferences of the normal competent jury.

#### Mechanics of Entering

The mechanics of sending slides to the shows are not complicated or difficult, but there are a number of things that are "musts." Your slides must be identified with your name and address and must be spotted in the lower left corner, when held in the hand, to indicate which side is up, and which face should be toward the projectionist. Since slides are passed through many hands as they are entered and checked by the show committee and it takes only one fingerprint on the emulsion to spoil a slide, it is best that they be glass-mounted. Remember also that most salons will not accept glass over readymounts as they are too thick for many projectors. You should title your slides, too. After filling out the entry blank and return labels (if furnished) with your name and address, and answering any other questions on the form and giving permission, if you wish, for reproduction, you are ready to wrap your slides. Select one of the boxes of the sort in which slides come from the processing station. Put a piece of corrugated cardboard in the bottom of the box, then two slides, and on top of them a piece of thin cardboard. Your two remaining slides are then added on top, another piece of corrugated cardboard completes the sandwich. You can fold your entry blank, together with your check, money order, or best of all, a dollar bill, and put it on top before placing the top of the box over all. Take another piece of corrugated cardboard of the same width as the box is long, and wrap it once around, holding it with a bit of scotch or gummed tape. Wrap the whole in brown paper, affix the address label, and send it first class mail. You will find that wrappings such as are described are ample protection, and first class postage will be about 12 or 15 cents for a domestic exhibition. Overseas postage will be a bit higher. The exhibition committee will be grateful if you get your slides into the mail in time for them to be received well before the deadline, as there is always a great rush at the last moment, and it makes their job easier if it can be spread over a greater period.

Remember, too, that a rejection or so does not neces-



PRETTY PITCHERS



Paul J. Wolf, APSA

VINO

sarily mean that your slide is no good. In addition to the normal reactions of the judges, the quality of the competition must be taken into consideration, and in most shows today it is high. The easiest way to get an idea of the real worth of your slides is to put them into local competition. If you are so fortunate as to belong to a camera club specializing in color, or to one with a large color section, entering your club's competitions will give a fair estimate of what you have. If this is not possible, you might want to try the PSA Color Division Individual Color Slide Competitions. It is not required that you be a Color Division member to enter these but a fee is required if you are a non-member. In addition to competing for medals and ribbons in what amounts to a small international exhibit, you receive written criticism of your entries. These

bi-monthly competitions which are carried out on a very high level, are especially desirable for those who nurture ambitions toward success in the big shows, and who need competent evaluation of their work. Information about these and many other types of competitions is readily available by sending a postcard to the Chairman of the Color Division, or to any committee member.

The best way to find out what will "go" in the shows is to see one, including the judging, if possible. While this is not often possible, if it can be arranged, it will show you what the judges accept, and even more important, what they reject. Oftentimes, too, their remarks, as they consider the entries, will really open your eyes. But since in most cases this is not in the cards, the next best thing is to select your finest, and send it out. And then hope.

### GETTING THE MOST OUT OF YOUR TELEPHOTO LENS

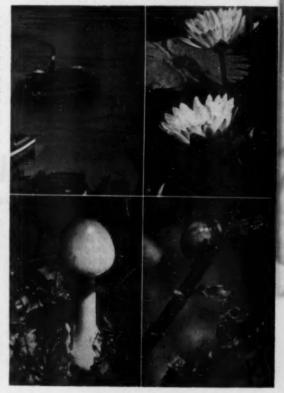
HOWARD E. FOOTE, APSA

The Greatest pleasure I have received from photography during the last two years has been the discovery of the many possibilities of a telephoto lens used with the Kodak supplementary lenses on a 35mm camera and ground glass focusing. My equipment has consisted of the 135mm Hector, the Leica, and its Reflex Housing. But there are many other camera set-ups which make it possible to do the same thing, such as the Leica Focaslide which I used previously, the Speed-o-copy for the Contax or Leica, the Kine Exakta which is the easiest to use with a few extension tubes, also the Praktiflex, Rectaflex, Contax-S, Alpa Reflex, or any other camera allowing ground glass focusing.

The Telek and Portra supplementary lenses made by Kodak, and used on the telephoto by means of a slip-on lens shade, give a surprising range of local lengths. The 3— Telek on the 135mm Hector, using the reflex housing and a 15mm extension tube, gives a focal length of 220mm with an increased exposure of 2.8 times. The 3+ Portra on the 135mm with reflex housing and no extension tube gives a life-size image on the film with a close-up exposure factor of 2.1. This is an advantage over the normal 4X increase for a 1:1 ratio. Many have wondered about loss of definition with these supplementary lenses, but 1 have not been able to notice any, even when using the 3— at 1/6.3 at 1/20 second for distant shots. Usually I stop down as much as possible using a 1 second exposure; f/29 at 1 second is average exposure on Daylight Kodachrome which I use almost entirely.

I worked out the table for area of field covered by focusing upon a well-lighted ruler. The increase in exposure, usually called a close-up factor, due to moving

Figure 1 (Top left)—Using 3— Telek. Figure 2 (Top right)—Scene using 2— Telek. Figure 3 (Bottom left)—No supplementary. Figure 4 (Bottom right)—Taken with the 3+ Portra.



the lens abnormally far away from the film plane for close-up focusing, was figured on the formula of (focal length of lens + length of reflex housing + extension tube) squared, divided by (focal length of lens) squared, equals the close-up factor. These dimensions must be figured consistently in millimeters, centimeters, or inches. Using the 135mm Hector with reflex housing and 15mm extension tube, it is figured

$$\frac{(135+62+15)^2}{135^2} = 2.47 \text{ or } 2.5$$

In focusing from infinity to 5 feet on my telephoto, the lens moves 15mm forward which accounts for the increased factor at 5 feet.

Figure 1 shows the results using the 3— Telek, f/6.3 at 1/20 sec., a view across the Hudson River from Weehawken. Figure 2 of water lilies was taken with the 2-Telek which I find most useful for flower photography, taken at a distance of about 6 feet, f/29 at 1 sec. exposure. Figure 3 of the toadstool was taken in a spot of sunlight in the woods, and the exposure is forgotten but it had to be bracketed. Figure 4 is a life-size image of the potato bug larvae taken with the 3+ Portra lens and the Leica Focaslide in the early morning before the breeze

Having recently obtained a 4- Telek, I find it changes my 135mm into a 270mm when focused at 6 feet with 60mm of extension tubes.

Recently a friend made a 10+ Portra lens for me, giving 2.5 magnification on the film. It has about a 1/2" depth of focus at f/36, and my exposure calculation came out right on Kodachrome.

One of the most interesting and convenient things about these Telek and Portra lenses is that one is usually working with the telephoto lens at the same distance from the film. There is not a lot of changing back and forth of extension tubes to accommodate the size of the subject, and consequently exposure factors are not varied greatly.

For anyone who likes to putter around with equipment and does not mind a little arithmetic, here is something different to try out, opening up new fields of photographic subjects to stimulate interest.

135mm Hector focused @	Extension Tubes-mm	Supplementary Lens	Exposure Increase Factor	Length of Field Covered	Distance from Back of Camera
inf.	0	2—	2.1 2.5	18" 8	81" 59
inf.	0	1-	2.1 2.5	5 1/2 4	36 31
inf.	0	0	2.1 2.5	3 1/16 2 1/2	25 1/4 23 1/2
inf.	0	1+	2.1 2.5	2 3/16 1 7/8	20 5/8 20
inf. 5'	0	2+	2.1 2.5	1 11/16 1 1/2	18 1/8 18
inf. 5'	0	3+	2.1 2.5	1 7/16 1 1/4	16 3/8 16 3/8
inf.	0	10+	2.1 2.5	5/8 9/16	11 7/8 12 1/8
8'	15	3-	2.8	infinity	220mm
inf. 5'	15	2-	2.5 2.8	10 5 3/4	57 43
inf. 5	30	2-	2.8 3.2	6 4 3/4	42 36
inf. 5	45		3.2 3.6		
inf. 6	60		3.6 4.0	1 7/16	
6'	60	4	4.0	infinity	270mm
inf. 5	75		4.0 4.5		
inf.	90		4.5 5.0		

Table 1. 135mm Telephoto Lens used with Reflex Housing.

### THE GEVAERT DIAVERSAL PROCESS

W. K. RAXWORTHY\*

HE announcement of the Gevaert Diaversal Process in the late Fall of 1950 suggested the possible use of this process as a reliable substitute or replacement for a process1 previously examined as a means for obtaining paper prints from color transparencies by direct reversal methods. Materials for the former process seem to have disappeared from the dealer's shelves, at least in the Midwest, and are either no longer available or must be obtained from single distribution point elsewhere.

A somewhat definite limitation is thus imposed upon Color Division members and others who wish to make paper prints in monochrome from their color transparencies by direct reversal procedure rather than by the

more tedious intermediate negative method. This investigation of the Gevaert Diaversal Process was accordingly undertaken to determine its merits and to evaluate it in terms of other reversal processes. The procedure is consistent with the established policy of the Color Division and is conducted as a service to its members to enhance the general knowledge and to extend the usefulness of new products and materials wherever possible.

1) Raxworthy—The Panchro-Versai Process. PSA JOURNAL 1947, Vol. 13, No. 11, p. 662.

<sup>\*</sup>Technical Adviser, Color Division, PSA. Submitted for publication, April 11, 1951.

To furnish a means of comparison, an American product also designed for direct reversal processing was employed. This material, Kodak Super Speed Direct Positive Paper, will hereinafter be referred to as the control material. Each product was processed with the recommended materials and according to the respective instructions. The manner in which this was accomplished, together with other pertinent details including results of tests, is explained.

### The Diaversal Process

General

The Gevaert Diaversal Process provides a method for obtaining paper prints in monochrome from color transparencies or from black and white positive transparencies, such as lantern slides or motion picture frames, by direct reversal processing. Two emulsions are employed to ac-complish this, and in the words of the manufacturer, the process is technically described as "reversal transfer by diffusion." Prints can be made by contact or projection, the latter technique being employed throughout this in-

### The Base Material

The paper base is a single weight photographic stock supplied in glossy surface only and in two degrees of contrast, normal (N) and vigorous (V). The normal contrast material was used in these tests. At present, the available sizes are limited, but the manufacturer proposes to supply all standard sheet sizes.

#### The Emulsions

Two emulsions are employed, coated one above the other. The top emulsion is a silver bromide dispersion in a low melting medium designed to produce a temporary negative silver image. Because of its low melting characteristic, the top layer can easily be removed with warm water and gentle friction to expose the entire lower layer to further chemical action.

The lower emulsion is integral with the paper base and is described as a special transfer coating. It is not affected by the warm water treatment used to remove the top layer, and carries the final image. This is sepia in tone with normal processing but other tones are possible through the use of special toning formulas. There is no indication that black and white tones corresponding to those of silver images can be obtained. The emulsion sensitivity is not directly specified, but from a considera-tion of the recommended safelights it is presumed to be substantially orthochromatic.

### Safelights

One of several varieties of safelights is suggested and these are described as light-red, deep-orange, or olivegreen. No further description is given in terms of Wratten safelights but presumably they correspond to the Series 1 (light-red), Series 0 (orange) and Series 0A (greenishyellow) respectively.

#### Diaversal Kits

Complete kits are available for producing Diaversal prints. Included in these is a Revere Cine Graphic Enlarger-Viewer, a supply of paper, a safelight, three trays and the necessary processing solutions. Enlarger-Viewers are available in two sizes to accommodate either 8mm or 16mm motion picture film. A kit of either size is currently supplied at slightly less than fifty dollars, there being a slight price differential according to whether the 8mm or 16mm Enlarger-Viewer is selected. No lens appears to be furnished with the kit for use with the Enlarger-Viewer, and the possession of a motion picture camera lens of appropriate focal length seems a presumption on the part of the manufacturer or distributor.

Several manufacturers are involved in the production and distribution of the kits and materials. The paper is made by the Gevaert Company in Belgium, Revere Camera Company supplies the Enlarger-Viewer, and Edwal Laboratories, Inc. furnish the processing chemicals.

### Replacement Units

Replacement units are available which consist of Diaversal paper or the processing chemicals, and each of these can be obtained separately. Several sizes of the chemical units will be available in quantities of 1 quart, 1/2 gallon and gallon. A trial size unit is also available.

### Processing Chemicals

Three processing solutions are required and these are supplied in concentrated form. Dilution with water provides the working baths. A quantity of white powder is also supplied and a portion of this is added to each batch of reversal solution prior to use to complete the composition of this bath.

Plastic measuring cups, one for each solution, are provided, and these together with bottle caps, labels and trays are color coded to correspond. For use, a quantity of concentrate is poured into the respective cup, transferred to the appropriate tray and diluted with water to an embossed mark. No other volume relationship between concentrate and diluent is expressed either in the processing instructions or on the bottle labels. The processing temperature is specified at 65 to 75 F.

### The Technique

The processing sequence after exposure is indicated by the following operations:

1. First development—1 minute.
2. Transfer without rinsing to the reversal solution and process for at least 2 minutes. After about 30 seconds in this bath, room lights may be turned on and succeeding operations conducted under ordinary illumination.
3. Treat with warm water to remove the temporary negative silver image. Gentle rubbing with the fingers will expedite the removal which will require about 1 minute.
4. Transfer to the training bath and tone for not more than

4. Transfer to the toning bath and tone for not more than

minutes.
 Wash as usual for about 5 minutes. The prints may then be dried between blotters or ferrotyped.

The total indicated processing time is about 12 minutes including the wash period.

### The Control Material

For comparison at this point, the salient features of the control material2 are listed and a resumé of the processing sequence is described.

#### Salient Features

Base—Single weight, water resistant paper. Emulsion Speed—Fast, with either tungsten or fluorescent

Exposure Indexes—Daylight 10, Tungsten 5. These are approximate values to be used with exposure meters as a guide.

Surface—Smooth, brilliant lustre.

2) Direct Positive Photography With Kodak Super Speed Direct Positive Paper, Eastman Kodak Company.



AUTUMN CHROMA

Wells W. Smith

Image Tone-Pure deep black or rich warm sepia, depending

on processing.

Contrast—Medium, in terms of enlarging from transparencies. Color Sensitivity—Orthochromatic. Safelight—Wratten Series 2 (dark-red).

The sequence of processing operations is as follows:

First development (to a negative) 45 to 60 seconds.

Bleach-30 seconds.

Clear-30 seconds.

Re-Expose—2 to 3 seconds to a 40 or 60 watt bulb at about 6 inches. For sepia tones no re-exposure is necessary.
 Re-Develop or tone as desired, to a positive image, 30

A 30 second wash is given between each of the above operations and after the final one. A prolonged final wash is unnecessary. The total indicated processing time including final wash is 41/2 minutes.

#### Color Division Tests

General

The processing instructions for Diaversal Paper were not always explicit, embodying rather large temperature spreads in some cases and somewhat confusing in others. However, a temperature of 70 F was selected and all processing solutions were maintained at this level. Appropriate methods were employed to minimize the confused portions and to translate these in terms consistent with good technique.

The water temperature used for removing the temporary negative silver image was 110 F. This may have been somewhat higher than necessary since the emulsion appears to soften sufficiently for the purpose at about 85 F.

Cursory chemical examinations were made where necessary to allow a more accurate appraisal of the probable chemistry involved.

Generally speaking, however, both Diaversal and its control counterpart were processed according to the instructions and in a manner consistent with the purpose of the investigation.

Standard conditions" were established through the use of an Eastman Precision enlarger with Head A and a 4 inch Ektar enlarging lens. When in focus, the lens-to-easel distance was 161/2 inches and the magnification 31/2X. The magnification was governed by the largest paper size available at the time, and this was 4 x 5 inches. The light

source was a General Electric #212 Photo Enlarger Lamp under voltage control.

Under these conditions, and with the lens aperture set at f/4.5, the easel illumination was 7 foot candles. Exposures for Diaversal Paper were made at an aperature of f/11 at which point the calculated easel illumination was approximately 1.3 foot candles. The exposure time for "average" transparencies was 10 seconds.

Because of the greater sensitivity of the control material, a neutral density filter was used to reduce the easel illumination to a value of 2 foot candles at f/4.5 thus resulting in a calculated easel value of about 0.40 foot candles at f/11.

Processing solutions were replaced frequently to assure a reasonably consistent effectiveness in each case. Since no definite instructions were given with reference to the numerical volume relationship between concentrate and diluent to provide the working baths, 1 part of the concentrate was diluted with 7 parts of water, with the hope that this ratio would not be too far amiss.

The method used for determining print quality in the respective cases was by visual examination and appraisal. A Wratten #25 filter was used to convert the sepia tones of the Diaversal images to substantially equivalent monochromatic values as those of the black and white control images when viewed under the same conditions.

The transparencies selected were of "average" quality and contrast. Several contained predominately red objects to determine the reproduction characteristics of these on a substantially orthochromatic material.

#### Results of Tests

In its overall response to processing treatment, Diaversal Paper acted in a manner consistent with that described by the manufacturer or distributor. The Diaversal images were somewhat softer in appearance and seemed to have lost some highlight detail as compared to the control material. Since a solvent or bleaching action is known to take place in the toning bath, this apparent loss of detail might be accounted for by such action. A more intensive study, however, would be necessary to confirm this.

With reference to processing time, 12 minutes is weighted against 41/2 minutes for the control material, with a resultant ratio of approximately 3 favoring the latter. A consideration of relative easel illumination values for constant exposure times at the same aperature reveals that the control material is again faster by an approximate ratio of 3.

In base characteristics the control material is more substantial despite the fact that both materials are specified as single weight.

Processing chemicals for Diaversal are supplied only in packaged form, while those for the control material may be obtained either in packaged form or solutions can be prepared from formula. The latter is a particularly commendable feature.

A cursory chemical examination of the developer confirms the presence of metol. It is decidedly alkaline to litmus and is presumed to be of substantially conventional composition for its designed purpose. The top emulsion layer will respond to developers of the usual type, and the use of both medium contrast and high contrast metolhydroquinone mixtures confirmed this.

The reversal solution also contains metol and will develop the silver image in the top layer when used without the addition of the white powder. Conversely, the developer plus the white powder will perform the function of the reversal solution. The two solutions thus appear substantially similar in composition, the reversal solution requiring only the addition of the white powder to perform its designed function.

An examination of the white powder disclosed large amounts of a thiosulphate which suggests that it consists primarily of this substance, most likely the sodium salt or ordinary hypo. Each of the 8 small packets contained approximately 1.25 grams of this material, the addition of which to 1 part of the reversal concentrate plus 7 parts of

water provides the reversal bath.

The "reversal transfer by diffusion" action thus appears to be accomplished by a primary sulphiding action in the lower emulsion while this is protected by a negative silver image topside. This masking action selectively protects the lower emulsion, allowing greatest diffusion of the reversal solution in the regions of little or no silver and resisting the passage of it in the areas of high silver content. The removal of the top layer with warm water reveals a reversed image, dark tan in the areas of least resistance but only light yellow in those corresponding to the dense silver deposits of the top negative image. Subsequent treatment of the image in the toning bath progressively intensifies the rather light primary image, with a simultaneous change in hue throughout, to produce the final print.

This explanation of the action is perhaps somewhat conjectural and it is offered only in the absence of more specific data, with confirmation beyond the original pur-

pose of this investigation.

The composition of the toning bath is uncertain, since a number of substances were identified chemically. It appears to consist primarily of one of the polysulphides, the exact nature of which was not determined, since these are variable substances depending upon the method of preparation.

Because of the progressive nature of the toning action, an entire series of tones is produced, varying in hue and intensity from those of the rather weak reversed image to the final dark sepia image obtained after several minutes in the toner. It is reasonable to suppose that identical tones and contrasts would only be possible by precise control

throughout the entire process.

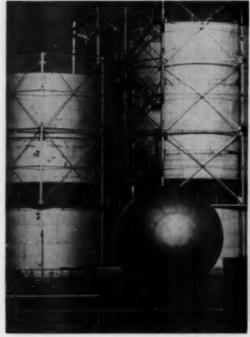
The deepest tones and maximum densities appear to be reached in somewhat less than 3 minutes in the toning bath after which a bleaching action reduces both tone and contrast to a point at which neither is satisfactory. This action is not continuous to the point of complete bleaching, but appears to stabilize after approximately 10 minutes. The resultant image is degraded in tone, low in contrast, and entirely unsatisfactory. For best results therefore, the prints should be removed from the toning bath in 1½ to 3 minutes depending upon circumstances and the tone desired.

An attempt to obtain good black images comparable in quality with those of silver, with supplementary processing, was not encouraging. In most cases the results were inconsistent and unpredictable. This was suspected beforehand but was nevertheless confirmed.

With reference to the reproduction of reds on an orthochromatic material, this color appears to have reproduced satisfactorily for practical purposes in each case.

#### **Further Considerations**

If price differentials are considered, the Diaversal Process appears to be the more expensive. A consideration of paper cost, for example, discloses that currently for equal quanti-



MONTEGAS

Karl A. Baumgaertel, APSA

ties of 4 x 5 material, Diaversal Paper costs 44 cents more per package of 25 sheets than does the control material. If this is extended to include the 8 x 10 sizes respectively, a price differential of \$3.43 is evident. Since a ratio of 1 to 4 in area exists between the two sizes, it might ordinarily be expected that the cost to the consumer would reflect an approximate relationship to this ratio. That such is not the case is evident, since if it were, a price differential of about \$1.76 rather than that indicated would exist. No reason can be assigned for this difference and it seems considerably out of line.

No expiration dates were indicated on the packages of Diaversal Paper used, and it would be difficult to determine beforehand whether or not the material had deteriorated prior to purchase.

#### Conclusion

It is generally concluded that the results of this investigation indicate the Diaversal Process to be consistent with the claims made by the manufacturer or distributor. It is unique in principle and may be described as essentially a sulphiding process. The inability of the process to yield good black and white images comparable to those of silver is believed to be somewhat of a disadvantage.

A consideration of all of the salient features of the two materials and the associated techniques, weighted each against the other, indicates that the control material rather than the title process is the better of the two, and no further work along this line is immediately contemplated.



THREE OF A KIND; taken outdoors at 1:40 p. m. in February with 58mm f/2 coated Zeiss Biotar, using extension tube; exposure 1/5th sec. at f/14, no filter.

At times one is almost led to believe there are as many differing ideas about what constitutes a good color slide as there are individuals. For example, although admittedly extreme, at the judging of a major international exhibition the writer witnessed one judge accord a slide the highest number of points possible while another gave the same slide the lowest rating possible. Both men rank high in color photography and in our international fraternity.

This is not an indictment of judging nor of exhibitions. On the contrary, difference of opinion as to what makes or does not make an acceptable slide is a good thing. Sorrowful the day when slide making and evaluation become moss-bound and mired down in a rut of dogmatic formulism. If this delightfully fascinating pastime should lose its plasticity and be reduced to a fixed scientific basis or formula, it would lose much of its interest—perhaps its greatest interest—to a vast majority of individuals. A strait jacket and color slides have nothing in common.

One of the things about slide making and evaluation that challenges and fascinates is its flexibility, its freedom of restraint, freedom of restrictions, of "rules and regulations," so to speak. There are, of course, recommended practices to follow. But one needn't follow them if he doesn't want to. He may stack the cards against himself if he so wishes. He can tell all the judges and authorities to go jump in the lake—and take pictures and evaluate them as he pleases. And, surprisingly enough, he may even have an occasional exhibition acceptance.

# COLOR SLIDE

A FEATURE BY

This same unorthodox individual may have an opportunity to sit in at the judging of an international exhibition, and disagree with the judges straight down the line—and have a good time doing it. However, if his own slides are thrown out, he had better begin examining himself, and his particular brand of technique, and consider both himself and his methods due for a good overhauling. Most judges at international shows are not pushovers.

Now, as to this matter of slide evaluation. Making a slide is one thing, evaluating it is another. Of the two, the latter is the more important. One can shoot dozens of rolls of good color film, but only when he begins seriously to study, analyze, and evaluate his slides does he begin to learn something about picture making—and by this is meant exhibition material. It is not a short or easy task. It is unending, in fact a constant challenge—but an enticing, fascinating challenge. Those who are feeble in perseverance, or who do not earnestly and seriously wish to strive for perfection, had best seek another pastime. Acceptable color slides and international exhibitions hold nothing for the snapshooter.

As commentator on one of the PSA Color Division slide study circuits, the writer felt the need of some sort of more or less standardized practical method by which to analyze and evaluate slides. Accordingly, an evaluation scale was worked out, hypothecated on the basis of rating slides from one to ten points. The scale is divided into six component parts or divisions, each representing what the writer considers a fundamental characteristic of a good slide, with scoring points apportioned accordingly. This enables a slide to be broken down into its various fundamentals, or lack thereof, and the same registered graph-



DESERT TREK; awarded silver medal at New York and honorable mention at Hawaii; taken at 4:00 p. m. in March in California; exposure 1/25th sec. at f/12.5 with coated Zeiss-Biotar f/2, 58mm lens, without filter.

# EVALUATION

GLENN E. BROOKINS

ically, permitting the maker to see at a glance the "why and wherefore" a slide is rated as it is.

The six divisions or parts of the evaluation scale, together with points accorded each, are as follows:

Impact					×			×					A		è		2	pts.
Dominant F	a	cl	te	g						í.					į,	,	1	pt.
Interest																		
Significance		*							Ų			*	×				1	pt.
Composition	i			*		÷	,		×	×	8	×	*	ú	į.		2	pts.
Technical																		

10 pts.

A further breakdown of the six components of the scale follows:

Impact—That quality which immediately engages and hold attention; a primary requisite, without which chances of exhibition acceptance are immeasurably lessened.

Dominant Factor—The one single physical aspect, or related aspects such as pattern arrangement, which dominates the entire scene; chief interest point, generally speaking.

Interest—May include both Impact and Dominant Factor, which are more specific qualities, but Interest is a broader term and takes in overall scene-appeal as well as viewer response; the quality or characteristic, in other words, which takes hold of one's admiration, or sympathy, or appreciation, or imagination, or pity, etc., and pulls one into the picture.

Significance, or Story-Telling Value—The quality, motive, mood, action, or force which motivates or actuates the scene and "makes it tick."

Composition—Impact, Dominant Factor, Interest, and Significance could all well be a matter of Composition; but Composition includes with the selection and arrange-



CHURCH ROCK; honorable mention at PSA Exhibition, Cincinnati; taken in Utah at 4:45 p. m. in August; exposure 1/50th sec, at f/5.6 with uncoated 10.5cm Zeiss Tessar lens, using Polaroid filter.



COMMUNICATIONS FROZEN; taken at 11:50 a. m. in March, with 73mm coated Hektor f/1.9 lens; exposure 1/100:h sec. at f/8, using Skylight filter.

ment of subject matter at time of photographing any additional subsequent arrangement or alteration of subject matter in its transparency state by cropping, reversing, non-conventional mounting, etc.

Technical—Includes various factors entering into operation of camera, lighting, exposure, etc., also processing, and the manner or method in which any subsequent treatment is given transparency before its final state of readiness for projection. For instance, cropping is an alteration of subject matter and as such is a constituent part of composition; but the physical act itself and the manner or method in which it is done is a technical matter.

The rule of rating a slide with a maximum of ten points created something of a problem in working out this system. As the writer sees it, and as exemplified in the foregoing scale, a slide has or should have six major fundamentals or characteristics—and six doesn't divide evenly into ten. Of these six fundamentals, the writer believes Impact, Interest, Composition, and Technical quality are of major importance, yet at the same time Dominant Factor and Significance are just as much a part of a good picture as are the former. So what? Something must receive a secondary rating in the evaluation chart: in this case a secondary rating has been assigned the last two named fundamentals.

Dominant Factor, of course, is primarily a matter of selection and composition, and as such could be included under the classification of Composition. However, for purposes of slide analysis and comment and the individual's use in studying his own work, the writer considers this factor of sufficient importance to give it a separate classification. As to Significance, many authorities state a picture isn't a picture at all if it doesn't tell a story.

### The Quality of Impact

Since the quality of Impact has aroused special interest among slide makers with whom the writer has talked, let's further consider this one aspect. Looking at a slide from the standpoint of its possibility of acceptance at an exhibition, what happens when the slide is flashed on the screen? In a matter of seconds, and a very few seconds at that, the experienced judge has formed his opinion, based upon his almost instantaneous reaction to the scene before him. That scene is competing with perhaps 1,000 to 3,000 or more other scenes for favorable attention-and hasn't all night in which to do it. It must make its impression almost instantly. If it has Impact, "that quality which immediately engages and holds attention," it has won half the battle for recognition. It has gained a toehold. If it does not have Impact, it stands an excellent chance of being passed up. Impact is the opening wedge to firmly securing a spot on the stage in the great international parade of the best the world has to offer.

What gives a slide Impact, it might be asked. The answer is simple: appropriate subject matter, effectively presented. But doing this sometimes is not so simple. Regardless of the nature of subject matter, there is always one most effective manner or method to present it. Effect, or effectiveness, in color slides is as a rule somewhat more difficult to attain than in black and white prints. The average slide maker does not have the advantage of darkroom control over his finished product. Whatever particular effect he wishes to attain must invariably be planned before he releases the shutter. He must evaluate his picture in its entirety at its very inception. He has but few major factors or mediums to work with: camera, composition, light and exposure; and, to a lesser degree, the transparency itself. But given these factors, together with suitable subject material, a vital feature of which should be simplicity, and bring into play imagination, originality, ingenuity-and the sky is the limit.

The nature of subject matter itself, of course, has something to do with Impact. Pets and children undeniably have appeal—and anything that has appeal inevitably has Impact. Featuring pets and children is one way to gain Impact and possible acceptances; but this type of slide may easily be overdone and judges become fed up with it.

Pets and "cute kiddie" arrangements are not necessary to gain Impact. Referring to the last round of slides the writer commented upon, six of the group were rated with the maximum number of points for Impact. Three exemplified this quality to a marked degree. One was a night scene, another a landscape, the third an industrial pattern composed of two transparencies, one superimposed upon the other. The three remaining slides consisted of a street scene, human interest scene, and a table top arrangement. None of them featured pets or children. Subject matter differed widely. Effective presentation of material chosen was the answer.

Any slide exceptionally well done, portraying anything under the sun from a telephone pole to match-heads and toothpicks, stands a favorable chance of exhibition acceptance. Judges are looking for meritorious slides, for originality, imagination, ingenuity, combined with simplicity and quality workmanship. Show them this, and the slide maker invariably will be rewarded.

### Workings of Evaluation Scale

With this digression, let's return to the slide evaluation scale itself as a whole. How does it work? For use by a group of judges, it probably would not be practical. There are too many factors to be considered in the short space of time a judge may allot to a slide. But for a commentator's use, or an individual's use in studying and analyzing his own work, it will be found both practical and beneficial. Also the system could doubtless be used to good advantage in moderate sized clubs or by smaller groups where a more intense study was to be given a number of slides than that commonly accorded them. A small printed or mimeographed form for scoring purposes is all that is required. For use on the slide study circuit, the writer had the scale made up in a small form about 11/2x2 inches in size and printed on gummed paper which was pasted in the circuit record book beside each comment, showing point by point how each particular slide was rated.

This method of evaluating a slide probably isn't perfect, few things are, but at least it represents an approach, and does provide a method for reducing a slide to its fundamentals, or lack of fundamentals, and graphically recording them. As a yardstick against which the slide maker may measure his slides, its intelligent use could and should result in much good to the serious worker.

In studying his own slides, or another's for that matter, let the worker develop a sense of discernment of the qualities which go to make up a good slide. Thus he will begin to look for those qualities before he makes an exposure. If he does not find them, or if he cannot inject them into the scene, chances are his picture taking will be slowed down somewhat. Result: less quantity, more quality. Actually, he will begin to evaluate his slide before he makes the exposure. When he does this, he will begin to take pictures.

A delightful picture is like a delectable pastry creation, composed of certain ingredients skillfully blended together. Only, with the picture, the ingredients are more variable, whereas the cake maker must follow a recipe or a standardized practice almost to the letter. The slide maker does not have to make any two slides by exactly the same procedure or method. He may vary his "ingredients" considerably, or on occasion leave out some entirely, and still have a delightful picture.

But remember this: When the cake maker starts out to mix his ingredients, he has one specific idea, one purpose, one plan in mind—the making of a delicious, perfect cake. He envisions and evaluates the finished product from its very inception. Let the picture maker take his ingredients and proceed accordingly, appraising his efforts, evaluating his finished product, bending every effort in skill and knowledge to accomplishing one definite, concrete idea or objective. The cake maker's product can be enjoyed by only a few; the slide maker's product may provide enjoyment and inspiration to uncounted thousands. Is this not something mightily for which to strive?

### CLUB COLOR SLIDE SET DIRECTORY

As a new service to clubs, and as an annual feature in the Color Division Section of the September PSA JOURNAL, we are publishing this directory of clubs which have slide sets available for lending to other clubs (not individuals) either on an exchange basis or without exchange. In the past the Color Division has, when notified that such sets were available, listed them in the Color Division bulletin. As these bulletins are not always available to the club member responsible for the booking of sets, and as it has become apparent that an annual listing would be of real value to clubs, we have compiled this listing from information supplied by the clubs.

It should be understood that in listing these sets, neither the Society nor the Color Division assumes any responsibility of any kind. All booking arrangements must be made between clubs directly. (The Color Division handles only sets which are assembled by itself.)

Experience has shown that while some sets may not be up to standard, in general most of them are at least interesting, and a few may be outstanding. Experience has also shown that most clubs are careful and prompt in the handling of such sets. (We'll remove from listing any clubs about which we receive complaints.)

Some of the sets listed were not quite complete at the time this directory was compiled, but with the exceptions listed, all should be ready at the time of publication. Where clubs complete sets in the interval between publication of these annual directories, we should be notified at once. In such cases we will show the necessary information in the current Color Division bulletin, and we will include the set in the following issue of the directory.

While there are no foreign sets listed, it is possible that such sets may be offered in the future. As the handling of such sets is bound to be troublesome to all clubs involved, we will in such instances provide special arrangements to

make things easier.

In order to make this listing complete, we have added an appendix showing information regarding slide sets available from the PSA Color Division. Information regarding these sets can be secured from the individuals

Correspondence from clubs regarding new listings and requests for information (but not for bookings) should be addressed to Karl A. Baumgaertel, APSA, 353 31st Avenue, San Francisco 21, California.

The following clubs have reported slide sets available:

ALLISON CAMERA CLUB, Wm. J. Outealt, Color Chairman, 3357 Broadway, Indianapolis 5, Indiana. 50 2 x 2 slides, some originals, some duplicates, subject, "All Indiana.' With typed comments; tape recorded comments can be furnished. Exchanges not necessary.

CATAWBA VALLEY CAMERA CLUB, Hickory, North Carolina. 50 2 x 2 slides, duplicates, subject, "Scenic Western North Carolina," with typed comments. Clubs with exchanges will

be given preference.

CHARLESTON PHOTO COLOR CLUB, 28 Stocker Drive, Windermere, Charleston, S.C. 28 2 x 2 slides, all originals of varied subjects, no comments. On exchange basis only.

DIABLO CAMERA CLUB, Box 204, Diablo Heights, Canal Zone. 82 2 x 2 slides, some originals, some duplicates, subject,

"Canal Zone and the Republic of Panama," with typed comments. Exchanges not necessary. As the Canal Zone is under U.S. control, there will be no customs difficulties.

F67 CAMERA CLUB, Carolyn J. Becker, 1143 Trenton, Bremerton, Washington. 30 2 x 2 slides, all originals, of the "Olympic Peninsula." With typed comments. Will give preference to clubs

offering a set in exchange, FORT DEARBORN CAMERA CLUB, 30 South Michigan Ave., Chicago 3, Illinois. 50 2 x 2 slides, some originals, some duplicates, of general interest, with typed comments. Exchanges not necessary.

FORTUNA COLOR SLIDE CLUB, 521 10th Street, Fortuna, California. 50 2 x 2 slides, duplicates, of the "Redwood Empire," with typed comments. This club is also preparing a set of 50 234 x 234 slides on the same subject, all originals, and with typed comments. On exchange basis only.

GENEVA CAMERA CLUB, Box 362, Geneva, New York. 50 2 x 2 slides, all originals of varied subjects. No comments

included, exchanges not necessary.

HUDSON VALLEY COLOR SLIDE CLUB, 138 Benkard Ave., Newburgh, New York: 50 2 x 2 slides of varied subjects. No comments included, exchanges not necessary. May have other sets available later.

LAKE SHORE CAMERA CLUB, Lake Shore Club of Chicago, 850 N. Lake Shore Drive, Chicago 11, Illinois. Had set in preparation. Will probably consist of 50 2 x 2 slides. Should be

NEW ORLEANS COLOR SLIDE SOCIETY, 3320 Nashville Ave., New Orleans, La. 50 2 x 2 slides, duplicates of general interest, no comments included, no exchange necessary. Will change set from time to time, but only one set available at a time.

PHOENIX CAMERA CLUB, c/o Leslie J. Mahoney, P.O. Box 1828, Phoenix, Arizona. 50 2 x 2 slides of "Arizona." Set in prep-aration. Will be ready about January 1952. PRESCOTT CAMERA CLUB, 603 S. Montezuma St. Prescott, Arizona. 40 2 x 2 slides of local subjects. No comments. Prefer

SHENANGO VALLEY PHOTOGRAPHIC SOCIETY, 325 Grant St., Sharon Pennsylvania. 30 2 x 2 duplicate slides of various subjects, no comments included, on exchange basis only.

TEXACO CAMERA CLUB, Box 509, Beacon, New York. Set of 2 x 2 slides of Dutchess County, New York, in preparation. Will probably include comments. Should be ready now. Exchanges not necessary

VENANGO CAMERA CLUB, 320 Cowell Ave., Oil City, Pennsylvania. 50 2 x 2 original slides of general subjects. No comments included. Exchanges not necessary. May have another set available at a later date.

### Appendix

We are showing below sets available from the PSA Color Division. As with all Color Division activities there are no fees charged to clubs affiliated with the Color Division. A small reservation fee is charged PSA member clubs not affiliated with the Division. These sets are not available to non-PSA member clubs.

Exhibition Slide Sets

These are sets composed of 50 slides of exhibition quality, complete with comment sheets, sufficient for an instructive 11/2 hour presentation. Although these slides are duplicates (from exhibition acceptances) an effort is made to maintain quality by selection. In order to minimize routing schedules, slides are distributed from various points throughout the country. Write to the committee member nearest you for requirements for borrowing these exhibition slide sets:

EAST, Charles A. Kinsley, 423 Colebrook Drive, Rochester 17,

WEST, Charles Green, 540 29th Street, Richmond, California. CENTRAL, A. C. Klein, 4467 N. Morris Boulevard, Milwaukee 11, Wisconsin.

International Slide Set Exchange

To enable American slide workers to see the equivalent work being produced elsewhere in the world, a series of international exchanges was begun in the fall of 1947 with England, Holland, Denmark, Australia, India, Mexico, and Canada, thus far included. The Color Division sends a set of slides (50) and receives a set of 50 slides for circulation to camera clubs in the United States. For information about these exchanges, write to: F. B. Bayless, 320 Cowell Avenue, Oil City, Pennsylvania.

# color division Policy on "Who's Who"

H. J. JOHNSON, FPSA

EVEN THOSE with exalted opinions of their own merits hesitate to proclaim them personally or too publicly. Much better if the perfection can be established by impartial outsiders in terms of cold statistics! Except that sometimes the statistics do not tell the desired story and some manipulation is required if the "correct" result is to be obtained.

It was to prevent such use or abuse of "Who's Who" that it has been a definite policy of Color Division, repeated many times, that there shall be no mathematical manipulation of "Who's Who" figures, no weighting schemes, no "official analyses," no statistical monkeyshines!

Let's see what have been some of the suggestions to make

the figures more "accurate."

One of the earliest "suggestions" was that the standings would be more accurate if it were recognized that some of the high scores were based on repeated use of the same slides and therefore additional acceptances of the same slides after the first time should not be counted. And shortly after, from another source, it was suggested that since any mediocre slide could be accepted once if it met up with a mediocre jury, an acceptance should not be counted unless the slide had at least one previous acceptance!

Then it was "suggested" that there was no recognition of the greater excellence of those slides which were prize winners and that the scores, to be "fair," should be weighted so that a first prize winner received 5 points, etc.

Another suggestion was that since judges "sacrifice" their ratings by judging, they should be paid in "average points"

each time they judge.

Other "suggestions" for making the table more responsive to its "purpose" have been to use "average acceptances," to find some way of inverse weighting of the number of years a person has been exhibiting, that acceptances in five or more shows be required for listing, etc. Very likely we shall receive other "suggestions" for making the list more "fair" to the "really better" slide makers, and the nature of some are discussed below.

One factor in establishing an exhibition record is that of finances. Most clubs have had variations of this problem discussed.

With an entry fee of \$1 for each show, plus postage and material, the cost now to send to all shows each year is approximately \$50. While that is not very expensive for most people, it does become important to younger photographers who are still in school, just married, etc. Such photographers are under a handicap no way associated with their photographic ability, which may be greater than that of one who can afford the entry fees for a few more shows.

A more serious financial problem is that in which affluency gives a large advantage over the average photographer. This is in terms of the ability to buy (and expose) film in huge quantities and to make costly trips to faraway places. Few readers of this page can afford to use \$300 or \$400 worth of film on one trip, yet there are those who can. The complications are these: (1) assuming two photographers of equal ability, he who could afford to take the largest number of pictures would, on the basis of a statistical record, be a much better photographer; (2) or, on the scattergun principle, a mediocre photographer could end up with as many good pictures as a good photographer, and a statistical record would show them equal in ability. Obviously, it would be risky to claim that the statistics prove one a better photographer than the other.

Photographers who have waited for the lighting to change, who have looked out of an office window at a snow scene they could not get away to film, who have not been able to complete a still-life to meet a deadline, etc., know the value of extra time to the photographer and the great advantage it is to have plenty of it. Yet there is no way to reflect this factor in statistical tables of acceptances.

Those who do not have to work can go back tomorrow or the next day when the lighting is right, can spend hours arranging and re-arranging a still-life, can return again and again to the nest containing the young birds, etc. Or those who work for themselves may leave at any time; if the snow and sun are just right, they can dart out immediately and not have to wait until the week end (when the snow is gone perhaps). Statistical tables may prove that such a one has more acceptances than another, but they will not prove that he is a better photographer.

Indirectly involved in the list is the complaint sometimes that professionals should not be allowed to enter exhibitions because it is not "fair" to the "amateurs." Without going into the reasons why there is to be no discrimination against professionals, it may be pointed out that many amateurs who acquire an equal amount of training may equal or better a professional's record.

Most clubs have a member or two who will skip a committee meeting in order to get a picture which more conscientious members will miss, or have members who will accept no responsibilities so that they may be free to make pictures. Such photographers can boast more acceptances

without being better photographers.

The purpose of "Who's Who" is not to establish with mathematical precision the relative ranks of photographic genius. (And in view of the problems presented above perhaps it can be understood that there could be no method which would do this.) The purpose is only to list those whose slide-making ability is probably above average, and beyond that point we do not intend to get involved in what degree above average. We know that it will be obvious that some are better than others, but each for himself will have to decide the limits of the grade cells.

## Who's Who In Color Slide Photography 1950-51

PERHAPS it will be worthwhile to answer here at the beginning some of the questions most frequently asked in connection with the following listing.

1. What period is covered? In general, the twelve months between the deadlines for the previous listing and this current listing. No exact answer is possible because though the usual deadline is July 1, some shows occurring within this period are tardy with their catalogs and the latter are not received in time for tabulation. And those tardy the previous year have to be included in the current list. Actually, the period is not important because all the shows covered in the senson are itemized below. There are no other shows, regardless of period, which belong in the list.

belong in the list.

2. Why are acceptances in such-and-such Nature show not included? Nature photography is a specialized field and has its own "Who's Who," which appears annually in the August issue of PSA JOURNAL. The list below includes only shows which have no restrictions on subject material. (Black-and-white "pictorial" shows also have their own "Who's Who," appearing annually in the November JOURNAL.)

3. How can one tell which shows will be listed? Requirements for listing have been published in PSA JOURNAL from time to time (see Sept. 1950 issue for complete summary), and those shows meeting these requirements are included. Infallible forecasts are not possible—a show may promise high performance and fail. (Dossiers are kept on all color shows and at the end of the season the records for each show are passed upon by Color Division's National Committee.)

In the following listing, only those exhibitions which have met established standards for recognition are included. Accordingly, one American exhibition and all foreign exhibitions, except Canadian and Cuban, are omitted. (On the other hand four shows received special recognition from Color Division for high standards of management.)

There were 707 color photographers who obtained the minimum number of acceptances (slides accepted in at least two shows) in the following exhibitions: Asheville, Berkshire, Bexley, Chicago, Cincinnati, Columbus, Cuba, Detroit, Dixie, El Camino, Halifax, Hawaii (1950), Louisville, Milwaukee, Minneapolis, Mississippi Valley, Montreal, New York, Pasadena, Philadelphia, Pittsburgh, PSA, Reading, Rochester, Sacramento, Salt Lake

City, San Francisco (Photochromers), St. Louis, Toronto, Tulsa, Victoria, and Whittier.

Note that there are 32 shows qualifying for listing compared with 29 last season. Correspondingly, there has been an increase in the number of exhibitors. In addition to the 707 listed below, there were 834 who were successful in only one exhibition, and approximately 1400 who submitted entries and had none accepted.

Judges' slides are not included in the following list, but asterisks indicate how many exhibitions the individual has judged.

The "Who's Who" list is compiled annually by national committee member Blanche Kolarik, APSA, from card files (more than 3500 individual cards) on which are recorded acceptances from the various exhibition catalogs. Catalog errors, variations in names and addresses, etc., require considerable investigation by direct inquiry, Color Division's cross reference files, and other sources developed for this purpose. Most such irregularities have been eliminated, but if there are any questions, these may be addressed



LILLIPUTIANS

K. A. Baumgaere

directly to Mrs. Kolarik at 2824 S. Central Park Ave., Chicago 23, Illinois.

	Name and Location	Exb.	Slides
	Name and Location Abeel, Alice M., Berkeley, Calif Abrams, S. T., Berkeley, Calif Adams, B. H., Phoenix, Arix Adams, F. N. Staten Island, N. Y. Adams, H. L., Salt Lake City, Utah Addayson, Loring, Beechwood, N. J. Addicks, Fred J. Milwaukee, Wis. Agnew, Louise C., Chicago, Ill Agnew, Louise C., Chicago, Ill Allen, F. R., Los Angeles, Calif Allen, Urban M., Honolulu, Hawaii Altman, J. H., Rochester, New York	2	2
ř	Abrams, S. T., Berkeley, Calif	3	9
ŀ	Adams, B. H., Phoenix, Arix	4	8
	Adams, F. N. Staten Island, N. Y.	2	3
	Adams, H. L., Salt Lake City, Utah	*3	4
	Addayson, Loring, Beechwood, N. J.	5	6
	Addicks, Fred J., Milwaukee, Wis.	2	3
	Agnew, Louise C., Chicago, Ill	26	53
	Anew, Wallace G., Chicago, Ill	19	38
	Ahern, R. F., Los Angeles, Calif	25	47
	Alten, Orban M., Honoiuiu, Hawaii	4	4
	Amades Dr. F. F. Toronto Con	- 4	23
	Anderson R N Detroit Mich	914	33
	Archibald I H Amsterdam N V	7	10
	Armstrone A M. Columbus Ohio	012	12
	Arneson, Gene, Kenosha, Wis.	2	- 4
	Ash, Bill, Ringgold, Ga	2	2
	Allen, Urban M., Honolulu, Hawaii Allena, J. H., Rechester, New York Amsden, Dr. E. E., Toronto, Can. Anderson, R. N., Detroit, Mich., Archibald, J. H., Amsterdam, N. Y. Armstong, A. M., Columbus, Ohio Arneson, Gene, Kenosha, Wis. Ash, Bill, Ringgold, Ga. Aughinbaugh, R. G., Beverly Hills, Calif. Ayres, E. D., Loa Angeles, Calif. Ayres, E. D., Loa Angeles, Calif. Babala, Michael, Dearborn, Mich. Bagley, E. S., Manhattan, Kans. Bahnsen, Mrs. E. Yellow Springs, O Bailey, Robert M., Christchutch, Baleley, E. S., Manhattan, Kans.		
	Calif.	2	3
	Ayres, E. D., Los Angeles, Calif	9	12
	Ayres, Irene, Los Angeles, Calif	20	32
	Babala, Michael, Dearborn, Mich	2	2
	Bagley, E. S., Manhattan, Kans		24
	Bahnsen, Mrs. E. Yellow Springs, O		24
	New Zealand, Christenuren,	,	2
	Bancroft C. San Francisco Calif.	2	6
	Banneen, Mrs. E. Tellow Springs, O Bailey, Robert M., Christchurch, New Zealand Barceot, C., San Francisco, Calif. Barker, I. C., San Francisco, Calif. Barker, I. C., San Francisco, Calif. Barreet, D. C., E., S. Lake City, U. Barreet, O. H., Salt Lake City, U. Barton, Christine, Torootto, Ont. Barton, Christine, Torootto, Ont. Barton, Christine, Torootto, Ont. Barton, Christine, Torootto, Ont. Barton, Christine, Torootto, Ont.	3	6
	Barnhart, P., W. Springfield, Mass.	2	4
	Barrett, Dr. C. E., S. Lake City, U.	10	13
	Barrett, O. H., Salt Lake City, U.	11	15
	Barrett, O. H., Sart Lake City, U. Barton, Christine, Toronto, Out Barusch, Dr. Leo, Roseville, Calif. Bates, Woody, Stamford, Conn Baumberger, M. E., Portland, Ore. Baumberger, K., San Francisco, Cal. Beckwith, Mary, Van Nuys, Calif. Beete, Robert S., State College, Pa. Beigel, Gisela, San Francisco, Calif. Render. Cammon L. Prescott. Ariz.	2	3
	Barusch, Dr. Leo, Roseville, Calif.	7	15
	Bates, Woody, Stamford, Conn	2	.2
	Baumberger, M. E., Portland, Ore.	15	30
	Baumgaertel, K., San Francisco, Cal.	51	77
	Beckwith, Mary, Van Nuys, Calif.	3	11
	Being Giarla San Brancisco Calif.	Á	6
	Bender, Cammon J., Prescott, Ariz. Bender, Cammon J., Prescott, Ariz. Benford, S. M., Mt. Vernon, N. Y. Bengston, E. D., Minneapolis, Minn. Benjamin, R., Mackinac Island,		4
		2	9
	Beneston F D Minneapolis Minn.	â	8
	Benjamin, R., Mackinac Island,		
	Mich.	3	4
	Benoit, C. M., Quebec City, Canada	2	3
	Benzel, John, Pasadena, Calif	4	9
	Berger, E. V., Hollywood, Calif	2	3
	Berger, Ken., Milwaukee, Wis	2	3
	Berglund, M. G., San Francisco, Cal	19	29
	Berks, Egon, Chicago, III.	12	12
	Biologic L., M.D., Bremerton, Wash.	7	3
	Biolophere Rev H Oil City Po	031	86
	Bittman F R Iamaica N Y		11
	Blachut, Irene, Los Angeles, Calif.	2	5
	Blackhall, W. L. Toronto, Canada	3	8
	Blackmun, P., Rochester, N. Y	3	3
	Blackmun, R. C., Rochester, N. Y.	9	12
	Blaha, G. W., Western Springs, Ill.	*2	4
	Blaha, M., Western Springs, Ill.	2	6
	Blakesiee, B. A., Haitford, Conn	2	3
	Francisco, Calif.	2	4
	Bosch John S Toronto Canada	-	
	Bokor Ted Pasadena Calif		3
	Boller, S., M.D., Los Angeles, Cal.	4	3
	Born, R. C., Longmeadow, Mass	6	10
	Bothe, Hans, Riverside, Calif	7	14
	Braginetz, Betty, Montreal, Canada	5	8
	Brant, W. E., Minneapolis, Minn.	3	4
	Brauer, Ethel, Los Angeles, Calif.	.3	3.2
	Benford, S. M., Mt. Vernon, N. Y. Bengiston, E. D., Minneapolis, Minn. Bengiston, E. D., Minneapolis, Minn. Benoth, C. M., Quebec City, Canada Bennel, John, Pasadena, Calif.  Benoth, C. M., Quebec City, Canada Bennel, John, Pasadena, Calif.  Bergist, M. G., San Francisco, Cal Berka, Egon, Chicago, Ill.  Biedel, C., M.D., Bremerton, Wash, Biedenbach, J., McConnelsville, O. Biedenbach, R., Rocheter, N. Y. Blackman, F. Rochester, Calif. Brown, J. Berokin, S. M. D., Loa Angeles, Calif. Brookin, G. Roches, Calif. Brookin, G. Randers, Calif. Brookin, John R. Californ, Monteau, Calif. Brookin, John R. Sanders, Calif. Brookin, John R. Sanders, Calif. Brookin, John R. Sanders, Calif. Brookin, John R. Californ, Monteau, Calif. Brookin, John R. Phillipshappin, R. Lighton, M. Chengo, Ill. Brookin, John A. Brookins, G. San Bernardino, Calif. Brookin, John A. Brookins, John R. Brookins, John R. Brookins, G. San Bernardino, Calif. Brookin, John A. Brookins,	14	92
	Braidenbach B Dittsburgh Da	9	17
	Brennan Jack, Saje Lake City, Utah	13	40
	Brennan, Mac. Salt Lake City, Utah	13	30
	Brice, Norman R., Clayton, Mo	**27	61
	Brockett, R. M., Chicago, Ill	3	4
	Brookins, G., San Bernardino, Cal.	29	47
	Brookins, John C., Ontario, Calif.	2	3
	Broun, R. G., Phillipsburg, N. J.	6	7
	Brower, R. G., Los Angeles, Calif.	3	3
	Broun, R. G., Phillipaburg, N. J. Brower, R. G., Los Angeles, Calil- Brown, Albert N., Chicago, Ill. Brown, Clarke C., Los Angeles, Cal.	13	25
	Brown, Clarke C., Los Angeles, Cal. Brown, D. M., Salt Lake City, U.	2	7
	Brown, Albert N., Chicago, Ill Brown, Clarke C., Los Angeles, Cal. Brown, D. M., Salt Lake City, U.	,	,

Name and Location	Feb	Slides	Raton, Win. G. M., Toronto, Can. Ebbedeld, E., Jackson Heights, N.Y. Ebbing, Mins L. B., Kansas City, Mo Eckest, Linda Grace, Richmond Heights, Mo. Edwards, Bill, Monterey, Calit. Ege, Mrs. Louise L., Cleveland, O. Enen, Leonard, North Bergen, N. J. Eldon, J. F., Melrose, Mass. C. Eldon, J. F., Melrose, Mass. C. Elperman, Frances R., Tulas, Gillagher, L. English, Harold, Chicago, Ill. Ergenbright, Eric L., North Hollywood, Calif. Evans, Boy M., Petaluma, Calif. Evans, Roy M., Petaluma, Calif. Eldon, Mins. C., Brooklyn, N.Y. Fergason, Don, Salt Lake City, Utah Finler, T. J., Staten Island, N. Y., Fleet, Mas, Toronto, Canada Fisher, T. J., Staten Island, N. Y., Fleet, Mas, Toronto, Canada Fisher, T. J., Staten Island, N. Y., Fleet, Mas, Toronto, Canada Fisher, T. J., Staten Island, N. Y., Fleet, Mas, Toronto, Canada Fisher, T. J., Staten Island, N. Y., Fleet, Mas, Toronto, Canada Fisher, T. N., Staten, Calif. Front, Foo. E., Los Angeles, Calif. French, E. S., Lon Angeles, Calif. French, E. S., Lo	Evh	Slides	Name and Location	Frh	Slides
Name and Location Brown, Earle W., Detroit, Mich. Brown, J. E., San Bernardino, Calif. Brown, J., W. Sommerville, Mass. Brown, Ruth, Seattle, Wash. Brown, W. B. J., Rochester, N. Y. Brown, W. B., J., Rochester, N. Y. Brown, W. B., J., Rochester, N. Y. Brush, P. Hardford F., Glendale, Cal. Buhn, N., Honolulu, T. H. Burdick, Harry A., Oakland, Calif. Burdess, Dr. J. F., Montreal, Can. Burdick, Harry A., Oakland, Calif. Burdess, D. J., F., Montreal, Can. Burdick, Herbert F., Chicago, Ill. Calkins, H. R., Wyland, MCh. Carnot, J. R., Carlott, Can. Carnot, J. R., Carlott, Can. Carnot, J. R., Carlott, Can. Carnot, L. L. Carnot, Bud, San Prancisco, Calif. Carnot, Harold, Yakima, Wash. Carlott, B. W., San Jose, Calif. Carnot, M. L., Do Angeles, Calif. Chambers, C. V., Tustin, Calif. Chambers, C. V., Tustin, Calif. Charlet, Eleasor B., N. Y., N. Y. Church, Eleasor B., N. Y., N. Y.	3	3	Eaton, Wm. G. M., Toronto, Can.	3	3	Heffler, R. E., Bedford, Nova Scotia	2	3
Brown, J. E., San Bernardino, Calif.	2	2	Ebbereld, E., Jackson Heights, N.Y.	13	17	Heller, Frank J., Bartlesville, Okla.	*3	3
Brown, Ruth, Seattle, Wash.	2	2	Eckert, Linda Grace, Richmond			Hiett, Lawrence D., Toledo, Ohio	3	10
Brown, W. R. J., Rochester, N. Y.	3	3	Edecumbe I. M. Rochester N.Y.	18	26	Hildebrand, Joel H., Berkeley, Cal.	*29	78
Brumfield, T. R., Columbus, Ohio	.10	18	Edwards, Bill, Monterey, Calif	2	2	Hill, J. L., Jr., Rochester, N. Y.	13	18
Brush, James E., Inglewood, Calif. Brush, Bradford F., Glendale, Cal.	2	4	Ege, Mrs. Louise L., Cleveland, O. Eisen, Leonard, North Bergen, N. J.	2	3	Hilliard, H. W., Steubenville, Ohio Hirt, G. G., Chapman Camp, Can.	3	11
Buha, N., Honolulu, T. H.	5	7	Eldon, J. F., Melrose, Mass.	3	3	Hodge, R. L., Owego, New York	4	10
Burgess, Dr. J. F., Montreal, Can.	6	11	Emanuelson, C. R., Chicago, Ill	11	30	Hoke, Harry G., Stillwater, Okla.	9	17
Burtch, Herbert P., Chicago, Ill.	3	7	English, Harold, Chicago, Ill	3	3	Holst Ages M. Phoenix Acia	6	12
Byce, Malcolm L., Petaluma, Calif.	6	6	Hollywood, Calif.	17	35	Holste, H. T., Los Angeles, Calif.	2	2
Calkins, H. S., Wayland, Mich	3	4 5	Evans, Jud. Galesburg, Ill	2	2 2	Holton, L. G., Bedfordshire, Eng.	3 2	3 2
Cannon, Jack, San Francisco, Calif.	4	9	Ewell, Merle S., Los Angeles, Cal.	***	6	Hopkins, J., Jr., Wilmington, Del.	5	5
Carey, Harold, Yakima, Wash,	2	2	Faraone, F. R., San Francisco, Cal.	20	28 2	Horsfall, Harry, Troy, N. Y.	23	32
Carlson, Esther J., Chicago, Ill	2	2	Faught, Dr. Francis Ashley,	**	13	Horvarth, Allan L., Dayton, Ohio	3 22	-36
Carter, I. L., Manhattan Beach, Cal.	11	17	Fay, Alice, San Francisco, Calif	3	5	Howe, John J., Buffalo, N. Y	2	2
Chambers, C. V. Tustin, Calif.	2	4	Feagans, Mrs. Raymond G., Bremerton, Wash.	2	2	Howlett, James W., Riverside, Ill.	2	3
Chantler, Dr. M. A., New Toronto, Canada Chrastil, A., Yonkers, N. Y. Church, Eleanor B., N. Y., N. Y. Church, G. H., Tucson, Arz. Caszewski, R. S., La Grange, III. Clancy, F. W. Toronto, Canada Clark, L. S., Minneapolis, Minn. Clark, R. L. M. D., Socramento, Calif. Clay, Earle B., Medicine Hat, Alta.			Feldman, Miss C., Brooklyn, N.Y.	4	6	Hughes, Bob, El Cerrito, Calit	8	17
Chrastil, A., Yonkers, N. Y.	30	80 12	Fields, Geraldine, Phoenix, Ariz.	10	12	Hundt, Hilbert R. Jr., Chicago, III.	3	4
Church, Eleanor B., N. Y., N. Y.	13	20	Finne, Mrs. V. D., Long Beach, Cal.	7	18 10	Hungerford, Homer, Dallas, Texas.	23	42
Ciszewski, R. S., La Grange, III.	5	13	Fleet, Max, Toronto, Canada	2	3	Hutchinson, E. W., Sharon, Conn.	. 66	9
Clark I S Minneapolis Minn	2	2	Fletcher, Fred D., Sonoma, Calif.	2	3	Inman, Mrs. Fressa Baker, Yellow	7	6
Clark, R. L., M.D., Sacramento,	-		Foote, Howard E., New York, N. Y.	4	9	Irvine, Eleanor, Berkeley, Calif	7	11
Clay Barle B. Medicine Hat. Alta.	2	3	Frank, Robert E., York, Pa French, E. S., Los Angeles, Calif.	4 2	5	Irvine, Geo. W., Salt Lake City, U.	3	7
Clemens, G., McConnelsville, Ohio	10	16	French, Geo. E., Los Angeles, Calif.	3	6	Ito, Monte, Honolulu, Hawaii	4	8
Coats, A. R., Worchester, England	2	2	Friend, V. R., Visalia, Calif.	7	19	lacobs, Mrs. T., San Francisco, Cal.	5	7
Colby, Harold L., Owego, N. Y	4	9	Frost, Francis R., Kansas City, Mo.	6	13	Jacobson, F. H., Minneapolis, Minn.	9	18
Coleman, W., San Bernardino, Cal.	2	3	Fullerton, It. W. R., Seattle, Wash.	3	5	Javurek, Wm. J., Cicero, Ill.	17	10 21
Colman, Dave, Salt Lake City, Utah	4	7	Gallagher, John C., Evanston, III.	4	3	Jeffers, Mrs. Pearl, Detroit, Mich.	5	5
Connery, J., St. Louis Park, Minn.	4	5	Garlick, F. A., Rochester, N. Y	8	10	Jennings, A. G., Santa Monica, Cal.	3	4
Cooke, Arthur I. Los Angeles, Cal.	11	15	Gatlin, Victor N., Tulsa, Okla	7	8	Jensen, F. E., Selma, Calif.	2 3	2 4
Cooper, Albert E., Omaha, Neb	3	3	Charlottesville, Va.	2	2	Johnson, E. R., Springfield, Mass.	5	18
Corlett, Reginald V., Toronto, Can.	11	21	Gerdau, Carl, New York, N. Y Gerbauser, Gabby, Sacramento, Cal.	3	6	Johnson, G. F., State College, Pa. Johnson, G. Lewis, Winthrop, Maine	20	36 36 54
Correa, Dr. H., Santiago, Chile	3	3	Getzendaner, C. W., Forest Grove,		21	Johnson, H. J., Chicago, Ill	27	54
L. L. N. Y.	4	4	Gildes, Ray, Jr., Baltimore, Md	4	5	Jones, Ralph E., Columbus, Ohio	19	44 12
Couch Karl Wm Columbus Ohio	2	6	Gill, J. B., Salt Lake City, Utah	3	9	Judy, Margaret, Los Angeles, Calif.	8	12
Crader, Byron S., Glendale, Calif.	10	23	Gillespie, Doc, Chicago, Ill.	6	11	Kahane, I., Long Island City, N. Y.	3	6
Crader, Otto A., Glendale, Calif.	2	6	Gingrich, Audrey, Detroit, Mich	8	11	Keech, Estelle, Racine, Wisc.	2	2
North Marshfield, Mass.	3	. 3	Gluck, Herman, N. Y. C., N. Y.	6	13	Kember, N. F., London, England	2	4
Craig, M., North Marshfield, Mass.	3	16	Goldman, Edna, Great Neck, N. Y.	4	6 56	Kendrick, A. M., Ritzville, Wash.	5	8
Crawford, George, St. Louis, Mo.	*25	55	Goldman, R. J., Great Neck, N. Y.	22	56	Kennedy, Joe E., Tulsa, Okla	19	48
Crofts, Verna I., Chicago, Ill	3	4	Goodwin, Mrs. J. E., Toronto, Can.	3	15	Key, Jane, Pittsburgh, Pa	2	3
Cullum, Arthur, Yonkers, N. Y.	2	4	Gore, Challiss, Orinda, Calif Gouty, Ruth. Pasadena, Calif	17	32	Kidwell, O. A., Pasadena, Calif	25	16 48
Cunning, Virgil A., Corona, Calif.	2	2	Grant, D. W., Franklin, Pa	4	9	Kinberger, J. X., Louisville, Ky	15	21
Cutak, Ladislaus, St. Louis, Mo	5	9	Grant, Hal, Berkeley, Calif	2 2	2	King, Alan G., Clayton, Mo.	2	2
Dale, Alan J., Milwaukee, Wis.	12	15	Gray, Clark A., Topeka, Kans	2	2	King, Betty, Hollywood, Calif	28	19
Darling, John S., Chicago, Ill.	11	16	Gray, Mrs. Lillian, Chicago, Ill	2	2	Kjar, Clinton, Stockton, Calif	2	2
Coffevuille Kans	2	2	Green, Chas. H., Richmond, Calif.	19	3.2	Kjorlie, E., Iron Mountain, Mich.	2	3
Davis, B. R., Salt Lake City, Utah	9	18	Monument Beach, Mass	3	4	Klein, A. C., Milwaukee, Wisc	17	20
Davis, L. S. Tustin, Calif.	2	2	Gregory, Mrs. J. V. C., Dayton, O.	26	60	Knepp, T. H., Stroudsburg, Pa	4	4
Davisson, Richard K., Berkeley, Cal.	3	4	Griffin, Bette, Stamford, Conn	3	3	Koch, W. H., Salt Lake City, Utah	26	94
De Asia, J. A., Elmhurst, N. Y	2	2	Groner, Jerrold M., Chicago, Ill	2	2	Kramer, Ludwig, Pleasantville, N.Y.	6	?
Decker, Mrs. F. M., S. Lake City, U.	2 3	2 8	Grove, John E., Hutchinson, Kans, Grum, G. A., Rochester, N. Y.	4	5	Krause, Earl E., Chicago, III	17	42
Deeming, G. T., London, England	2	2	Gruner, Cora A., Chicago, Ill	6	8	Krimmel, John A., Edinboro, Pa	12	21
Definer, W. J., Milwaukee, Wis.	19	34	Gunther, V. R., Galesburg, Ill	2 2	4	Kunhart, Zora, Chicago, Ill.	6	7
Dell, H. C., Toronto, Canada	11	18	Guy, B. M., Inglewood, Calif	3	3	Kyle, Marguerite, Columbus, Ohio	8 2	11
Delporte, Noel F., St. Louis, Mo.	7	15	Haist, Dr. G. M., Rochester, N. Y.	23	47	Ladensohn, B., San Francisco, Cal.	2	2
Derwich, C. P., Detroit, Mich, DeShazer, Dalton, Joplin, Mo.	11	19	Hamlin, G. E., Washington, D. C.	2	2	Lafen, Peter, Syracuse, N. Y.	3	14
Desmond, A. C., Newburgh, N. Y.	3	4	Hammond, Media, Los Angeles, Cal.	3	5	Lawrence, A., Dr., Flushing, N.Y.	4	5
Dewes, N. E., Minneapolis, Minn.	2	6 2	Hanson, L. D., Minneapolis, Minn.	21	34	Lehman, Saul, N. Y. C., N. Y	6	9
Dewey, Anne Pilger, Chicago, Ill.	8.	10	Hardie, D. B., Minneapolis, Minn.	2	2	Leibman, H., Chicago, Ill.	6	10
Calif. Clay, Earle B., Medicine Hat, Alta. Clemens, G., McConnelsville, Ohio Clay, Earle B., Medicine Hat, Alta. Clemens, Gertrude, Ohaland, Calif. Cats, A. R., Worchestre, England Colby, Harold L., Owego, N. Y., Collega, M. C., Coleman, W., San Bernardino, Cal. Coleman, W., San Bernardino, Cal. Coleman, Dave, Salt Lake Cay, Utah Colton, V. N. Mt, Vernon, N. Y. Connery, J., St. Louis Park, Minn. Conrath, P. A., Webster Groves, Mo. Cooke, Arthur J., Los Angeles, Cal. Cooper, Albert E., Omaha, Neb., Cooperide, J. L., Evansville, Ind. Contect, J. L., P. Santiago, Chile. Caswin, H. Cinton, Garden City, L. I., N. Y. Cottingham, M., Los Angeles, Calif. Couch, Karl Wim, Columbus, Ohio Crader, Bryton S., Glendale, Calif. Crader, Cray, M., Worth Marshfeld, Mass. Cramer, Louise, Salt Lake City, U. Crawford, George, St. Louis, Mo. Crofts, Verna I., Chicago, Ill. Cudbiet, M. R., Spencerport, N. Y. Culliam, Arthur, Yonkers, N. Y. Core, P. M. S. Lake City, U. Daving, John S., Chicago, Ill. Davenport, Mr. Goldie M., Coffeyulle, Kans. Davis, B. R., Salt Lake City, U. Deening, G. T., London, England Deflorer, Janet, Milwauker, Wis. Dechert, Peer, Pridegeoper, Ps. Decker, Mrs. F. M., S. Lake City, U. Deening, G. T., London, England Deflorer, Janet, Milwauker, Wis. Decher, Peer, Pridegeoper, Ps. Decker, Mrs. F. M., S. Lake City, U. Deening, G. T., London, England Deflorer, Janet, Milwauker, Wis. Decher, Peer, Pridegeoper, Ps. Decker, Mrs. F. M., S. Lake City, U. Deening, G. T., London, England Deflorer, Janet, Milwauker, Wis. Decher, Peer, Pridegeopor, Ps. De	-	-	Harding, R. E., Albert Les, Minn.	2	2	Lewis, Floyd A., Hollis, N. Y.	8	11
Dixon, Joe M., Roseville, Calif.	19	45	Harrison, Maurice, Portsmouth Va	5	6	Lewis, M. W., Maspeth, L.I., N.Y.	25	55
Dollard, Russell, Kansas City, Mo.	5	6	Hart, L. H., Salt Lake City, Utah	2	3	Linblad, C. F., Worcester, Mass	2	5
Douglas, Bruce, Toronto, Canada	2	10	Hauser, Flora, Minneapolis, Minn.	2	2	Lockard, J. P., Jr., Scarsdale, N. Y.	3	3
Dow, G. Wayne, Stanford, Calif	3	3	Hawley, R. W., New York, N. Y.	3	3	Love, Paul, Glendale, Calif	3	7
Duberg, G. A., New York, N. Y.	2	3	Washington, C. H., Ohio	5	12	Lowenthal, A. E., Rochester, N. Y.	4	8
Dudziak, Jos. L., Richmond, Calif.	3	4	Hayward, E. H., Long Beach, Calif.	3	7	Lum, G. H. C., Honolulu, Hawaii	3	10
Dick, Walter G., Rochester, N. Y. Diehnell, Walter J., Menomonee Falls, Wisc. Dison, Joe M., Roseville, Calif., Dollard, Russell, Kansas City, Mo. Dollard, Russell, Kansas City, Mo. Doolittle, James E., Ossining, N. Y. Douglas, Bruce, Toronto, Canada Dow, G. Wayne, Stanford, Calif., Drake, E. S., Toronto, Canada Duberg, G. A., New York, N. Y. Ducker, Pete, Jr., La Canada, Calif. Dudziak, Jos. L., Richmond, Calif. Dunda, Dorothy L., Pullman, Wash. Duvall, Albert H., Galesburg, Ill. Duvall, Albert H., Galesburg, Ill.	2	39	Gerdau, Carl. New York, N. Y. Gerhauser, Gabby, Sacramento, Cal. Getzendaner, C. W., Forest Grove, Ore. Gridea Bay, Jr., Baltmore, M.d., Gridea Bay, Grant, M.d., Gridea Bay, Grant, M.d., Gridea Bay, Grant, M.d., Goldman, B. J., Great Neck, N. Y. Goldback, Beha, Great Neck, N. Y. Goldback, Beha, Great Neck, N. Y. Goldback, Ban, Great Neck, N. Y. Goldback, M. J., Franklin, P.a. Grotte, Baltmore, Gridea Bay, Grant, H.d., Grotte, Ruth, Pasadena, Calif. Grant, D. W., Franklin, P.a. Grant, H.d., Berkeley, Calif. Grant, D. W., Franklin, P.a. Grant, H.d., Berkeley, Calif. Grant, H.d., Berkeley, Calif. Grant, H.d., Berkeley, Calif. Grant, M.d., Berkeley, C. Dayton, O. Griffin, Bette, Stamford, Conn. Grant, M.d., Charles, M.d., Charles, M.d., Grant, M.d., Charles, M.d., Charles, C. Conn. Grant, M.d., Charles, C. Charles, M.d., Grant, M.d., Charles, M.d., Grant, M.d., Charles, M.	8	12	Heffler, R. E., Bedford, Nova Scotta Heiller, Frank J., Bartlesville, Okia. Heissing, Mrs. J. M., Claybon, Mo. Heissing, Mrs. J. M., Claybon, Mrs. Heissing, Mrs. J. M., Charlett, M. H., Heill, Edward, A., Fleetwood, Pa., Hill, J. L., Jr., Rochester, N. Y. Hill, Edward, A., Fleetwood, Pa., Hill, J. L., Jr., Rochester, N. Y. Hillard, H. W., Steuberville, Ohio Hitt, G. G., Chapman Camp, Can. Hodge, R. L., Owego, New York, Hodgins, G. B., Leaside, Canada Hoke, Harry G., Stillwater, Okia. Hillson, J. B., Los Angeles, Calif. Holton, J. B., Las Mangeles, Calif. Holton, J. B., Changeles, Calif. Holton, J. M., Las M., Honsewood, H. Horvath, Milan L., Dayton, Ohio Howe, Chas. A., Homewood, H. Howston, Mrs. F. R., Berca, Ohio Howe, Chas. A., Homewood, H. Howston, Mrs. F. R., Berca, Ohio Howe, Chas. A., Homewood, H. Howston, Mrs. F. R., Berca, Ohio Howelet, James W., Riverside, Ill. Hungerford, Homer, Dallas, Texas. Hunter, C. W. L., Wash, D. C., Hutchinson, E. W., Sharon, Conn. Imma, Mrs. F. R., Sering, H. Hunderford, Homer, Dallas, Texas. Hunter, C. W. L., Wash, D. C., Hutchinson, E. W., Sharon, Conn. Imma, Mrs. F. R., Sering, H. Hunderford, Homer, Dallas, Texas. Hunter, C. W. L., Wash, D. C., Hutchinson, E. W., Sharon, Conn. Imma, Mrs. F. R., Sering, H. Hunderford, Homer, Dallas, Texas. Hunter, C. W. L., Wash, D. C., Hutchinson, E. R., Seringhel, Mass. Yolio, Mrs. Lawrenton, Chin, F. R., Seringheld, Mass. Ohionon, G. F., State College, Pa. Hohnon, Mrs. H. M., Maspeles, Calif. Levins, Mrs. L., Lawrenton, Chin, Mrs. Lawrenton, Schotton, Chin, H., Kange	8	10
committee in consoning, in-	2.0	22	race, sair we can removed, Hawaii	4	-	educat us art nesse conseller to	50	-

Name and Location  Macaulay, Don, Sacramento, Calif. MacLean, D. J., Gatlinburg, Tenn. MacKodulin, Smith, Inglewood, Cal. Maddox, A. W., Norwalk, Calif. Maddox, A. W., Norwalk, Calif. Maddox, A. W., Norwalk, Calif. Mahaffer, J. F. New York, N. Y. Mahoney, Les, Phoenix, Ariz. Maki, T. R., Hancock, Mich. Mahaffer, J. F. New York, N. Y. Mahoney, Les, Phoenix, Ariz. Maki, T. R., Hancock, Mich. Malek, J. J., Stony Creek Mills, P. Manzer, H. C., New York, N. Y. Marker, Mr. Estelle, Oakland, Cal. Marshall, H., Shaker Heights, O. Mason, H. J., Los Angeles, Calif. Matz, Raymond A., Chicago, Ill. Mason, H. J., Los Angeles, Calif. Matz, Raymond A., Chicago, Ill. Mason, H. J., Los Angeles, Calif. Matz, Raymond A., Chicago, Ill. Mauger, H., Jackson Heights, N.Y. McCay, Helen, Cleveland, Ohio Mason, H. J., Los Angeles, Calif. McKeown, J. Los Angeles, Calif. McSheely, A. Kew Gardens, N.Y. McSheeby, M. K. W. Gardens, N.Y. Mester, M. M. Marthall, M. M. M. M. Marthur, Canada Metcalif. G. E., Sacramento, Calif. Miller, Bernard D., Glendale, Calif. Miller, Paul L., Seattle, Wash. Miller, R. R., Lebanon, Ohio Miller, W. M. D., Santa Ans, Calif. Miller, W. M. D., Santa Ans, Calif. Miller, W. M. D., Santa Ans, Calif. Mithell, Preston E., Whittier, Calif. Moddelonge, J. C., Cleveland, Ohio Moddelonge, J. C., Cleveland, Ohio Moddelong, J. C., Cleveland, Ohio	Exh. Slides	Name and Location Poster, E. R., San Francisco, Calif. Poster, R. W. L., San Francisco, Calif. Pozesi, P., San Francisco, Calif. Pratte, Paul K., St. Louis, Mo. Prette, P., San Francisco, Calif. Pozesi, P., Calif. Pozesi, P., San Francisco, Calif. Pozesi, P., San Francisco, Calif. Pozesi, P., San Francisco, Calif. Purtam, R., Grand Rapids, Mich. Purtam, M., Grand Rapids, Mich. Purtam, W., Grand Rapids, Mich. Randill, B., B., Orioda, Calif. Randill, B., B., Orioda, Calif. Ratifice, W. W., Provo, Utah. Ratifice, W. W., P	Slides	Name and Location	Exb.	Slides
Macaulay, Don, Sacramento, Calif.	4 2	Porter, E. R., San Francisco, Calif. 10	14	Name and Location Spaven, L. M., Rochester, N. Y., Spearman, Virginia, Omaha, Nebr. Spuhler, Walter, Tulis, Otla. Stake, Kathryn, Salt Lake City, U. Stake, Kathryn, Salt Lake City, U. Stanley, John H., Columbus, Ohio Stark, Mrs. Alice, Toronto, Canada Stark, Wes, Toronto, Ont., Canada Steatns, Richard G., Holyoke, Mass. Steck, George F., Oil City, Pa. Steever, Jean M., Camden, N. J. Steever, Jean M., Mt. Vernon, N. Y. Stettler, A., San Francisco, Calif. Stewart, A., Sante Barbara, Calif.	8	13
MacMullin Smith Incleased Cal	4 6	Potts, R. W. L., San Francisco, Cal. 16	23 19	Spubler Walter Tulsa Okla	2	2
Maddox, A. W., Norwalk, Calif.	2 2	Prasse, Alvin W., St. Louis, Mo 2	3	Stake, Kathryn, Salt Lake City, U.	3	6
Madsen, J. F., Berkeley, Calif	7 9	Pratte, Dorothy, St. Louis, Mo *3	4	Stanley, John H., Columbus, Ohio	11	11
Mahoney, Les, Phoenix, Ariz.	6 11	Prentke, E. M., Cleveland, Ohio 6	7	Stark, Wes, Toronto, Ont., Canada	9	17
Maki, T. R., Hancock, Mich	2 2	Preston, Harold A., Hartford, Conn. 2	2	Stearns, Richard G., Holyoke, Mass.	30	78
Manzer, H. C., New York, N. Y.	0025 72	Purves, B. G., Glendora, Calif 16	27	Steever, Jean M., Camden, N. J.	2	3
Marker, Mrs. Estelle, Oakland, Cal.	8 13	Putnam, Ann, Mt. Carmel, Ill 2	2	Stephenson, M., Mt. Vernon, N. Y.	2	2
Marshall, H., Shaker Heights, O.	11 17	Putnam, T., Grand Rapids, Mich. 14 Putnam, W., Grand Rapids, Mich. 12	18	Stewart A Santa Barbara Calif.	0.50	90
Matz, Raymond A., Chicago, Ill	7 13	Rahn, Gary, Zurich, Switzerland 2	5	Stewart, W. G., San Geronimo, Cal.	5	12
Maugeri, H., Jackson Heights, N.Y.	8 11	Randall, B. B., Orinda, Calif 21	56	Stickney, Mrs. F., W. Caldwell, N.J.	10	12
McGregor, H. R., Toronto, Canada	3 4	Rasch, Arthur, Rochester, N. Y 2	6	St. Laurent, L. R., Ottawa, Canada	2	4
McGregor, K., Toronto, Canada	9 19	Ratcliffe, W. W., Provo, Utah 4	5	Stout, Perry R., Oakland, Calif	2	3
McKeey, Chas. B., Sacramento, Cal.	2 2	Rawley, S. I., Milwaukee, Wisc 4	8	Struss, Karl. Hollywood, Calif	3	3
McLain, David A., Endicott, N. Y.	2 5	Redelmeier, Bob, Toronto, Canada . 2	2	Sullivan, W. F., San Francisco, Cal.	14	20
McLeod, E. M., San Francisco, Cal.	14 23	Reich H. R., N. Tonawanda, N. Y. 2	6	Suter Mrs W. L. Winnetka III	4	10
McSheehy, A., Kew Gardens, N.Y.	8 11	Reiser, Irene K., Chicago, Ill 2	3	Sverdrup, Jack, St. Louis, Mo	2	2
McSheehy, B., Kew Gardens, N.Y.	12 19	Rentro, Alfred, Bellevue, Wash 6 Rentrole Mrs. M. Compton Calif. 4	13	Swain, Rev. J., Middletown, Conn.	8	13
Medbery, Mrs. L., Armington, Ill.	13 31	Reynolds, Perry J., Detroit, Mich. 10	16	Tharp, K. W., Whittier, Calif	2	2
Medill, Stewart, Toronto, Canada	2 2	Rhoads, J. E., Wilmington, Dela. 3	3	Thaw, Mrs. S., Washington, D. C.	30 12	82 17
Mereen, Donald, Milwaukee, Wisc.	2 3	Rice, Dr. Frank E., Chicago, Ill 28	53	Thompson, J., Oklahoma City, Okla	4	5
Merrifield, N., Port Arthur, Canada	17 35	Richter, Fred T., Chicago, Ill 7	13	Thompson, N., Los Angeles, Calif.	9	22
Miller, Art. Redlands, Calif.	4 6	Riley, Robert S., Berkeley, Calif 3	6	Thurston, L. A., Merced, Calif Thurston, L. A., Detroit, Mich	10	14
Miller, Bernard D., Glendale, Calif.	4 7	Rittenhouse, Paul L., N. Y., N. Y. 3	3	Tietzel, F. A., Columbus, Ohio	9	23
Miller, Lowell, Rochester, N. Y	15 27 16 26	Ritter, C. E., Los Angeles, Calif 2	4 -	Tillbeck, J. J., San Francisco, Calif.	4	13
Miller, R. R., Lebanon, Ohio	8 9	Roberts, L. S., Whittier, Calif 4	5	Toll, Grant, Windsor, Ont., Canada	9	14
Miller, Wm. D., Santa Ana, Calif.	2 3	Robertson, J. E., Milwaukee, Wisc. 6	11	Totin, John, Honolulu, Hawaii	2	2
Greenwich, Conn.	3 5	Robinson, Barbara A., Wilmette, Ill. 8	9	Townsend, B. S., Johnstown, Pa.	27	60
Mintel, Asny A., Brooklyn, N. Y.	10 17	Robinson, L., Jr., Redondo Beach,		Tozer, E. G., Oshawa, Canada	11	15
Minton, Mrs. Paye, Balboa Heights,	2 2	Rolfe, Ashley E. Chicago, III. 6	10	Tremor Ruth Buffalo N. Y.	11	7
Mitchell, H. G., Chicago, Ill	7 15	Romig, O. E., Pittsburgh, Pa 4	5	Tucker, Ervin A., Kirkwood, Mo.	3	7
Mitchell, Preston E., Whittier, Calif.	5 15	Roscup, Wm. M., Detroit, Mich 2	2	Tueller, V., Sait Lake City, Utah	2	6
Moehn, Robert C., Downey, Ill	3 5	Ross, B. G. MacLeod, Joliet, Ill. 8	12	Urbain, Leon F., Chicago, III	10	16
Mog, Earl R., Stockton, Calif	2 4	Ross, Mabel, Salt Lake City, Utah 27	10	Valastro, S. C., Brooklyn, N. Y.	3	97
Moore, J. W., Minneapolis, Minn.	3 5	Roush, Hoyt L., Charlotte, N. C. 3	3	Vanden, Geo. W., Chicago, Ill	30	70
Moore, R. J., Minneapolis, Minn.	3 4	Row, S. V. Gopal, Madras, India 2	2	Van Der Hoop, W., Hamilton, Mich	4	2
Morley, W. M., Washington, D. C.	5 6	Rubin, Earnest John, Portland, Ore. 2	2	Conn	3	3
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Mover, E., Santa Barbara, Calif.	27 49	Sage, Ruth F., Buffalo, N. Y	3	Vogan, Sam L. Toronto, Canada	27	46 57
Moyer, Foster E., West Lawn, Pa.	4 5	Sandahl, H. E., Minneapolis, Minn. 3	4 .	Vogel, Raymond S., St. Louis, Mo.	5	8
Moyer, J. A., Santa Barbara, Calif.	24 51	Sanford, M. C., Salt Lake City, U	4	Walercon Mrs C R Chicago III	26	32
Mumm, Jacob, Anaheim, Calif	3 9	Sarff, Walter, New York, N. Y 7	11	Walker, J. D., New York, N. Y		10
Munch, Betty, Woodhaven, N. Y.	4 4	Sartor, A. F., Jr., Houston, Tex. 2	2	Walsh, Mrs. T. L., Asusa, Calif.	2	2
Murphy, Roy H., Whittier, Calif	3 10	Saxon, S. David, Stockton, Calif 11	26	Ward, Cleve, Kenosha, Wisc	6	13
Murray, Thos. F., Rochester, N. Y.	6 6	Sayre, Harrison S., Annapolis, Md. 6	9	Ward, M. F., Los Angeles, Calif.	2	43
Nelson, Robert R., Denver, Colo.	8 14	Schlegel, Lillian, Fleetwood, Pa 9	11	Wasserman, I., W. New York, N.I.	6	10
Nesbit, E. A., Tulsa, Okla.	2 3	Schloeder, W. J., Los Angeles, Cal. 5	6	Watts, Gaylord A., Detroit, Mich.	5	7
Newman, A., Onkland, Calif.	3 6	Schmidt, Emil K., Omaha, Nebr 2 Schmiddell, Doria Carmel, Calif 2	2	Webb. Rand. Beaver Falls. Pa	3	7
Necol, Ruth J., Butte, Mont	3 4	Schott, Dr. J. L., Sioux City, Iowa 3	4	Webber, C. S., San Leandro, Calif.	2	3
Niesen, Clifford F., Burbank, Calif.	2 2	Schreiner, T. R., Buffalo, N. Y 4	9	Weber, N. E., Bowmansville, Pa	6	7
Norgaard, Mrs. E. D., Los Angeles	24 39	Robinson, Mrs. A., Miami, Ariz. Robinson, Barbara A., Wilmette, Ill. Robinson, L., Jr., Redondo Beach, Calif. Calif. Robinson, L., Jr., Redondo Beach, Calif. Robinson, C., Jr., Redondo Beach, Calif. Robinson, C., Jr., Redondo Beach, Calif. Rosin, D. E., Pitsbuggh, Pa	62	Weidenfeller, J. D., Broadview, Ill.	3	4
Norgaard, F. L., Los Angeles, Calif.	6 18	Scott, Arthur J., Waltham, Mass 23	69	Weihrich, H. C., Buffalo, N. Y.	4	9
Norris, Dorothy L., N. Y., N. Y.	6 8	Seldidge, Hy, Honolulu, T. H 13	21	Wells, Frederick C., Chicago, Ill.	4	3
O'Brian, D. Patsy, Petaluma, Cal.	2 2	Severson, E. P., Hollywood, Calif. 2	5	Wells, Joseph C., Chicago, Ill	4	4
Owen, Ethel P., Riverside, Ill	7 10	Shaffer, Marcia, Akron, Ohio	5	West, Merrill, Glendora, Calif	27	6
Owens, Mary E., Toronto, Canada	7 19	Sharpe, D. H., St. Catharines, Can. 3	4	Westman, Roy W., Chicago, III.	8	18
Pagel, Victor, Milwaukee, Wisc.	6 10	Shea Art F Dayton Obio 3	60	Whitaker Russ Altadena Calif	4	7
Pagenstecher, A., Biltmore, N. C.	4 8	Sheldon, H. D., W. Caldwell, N. J. 3	5	Whitcomb, Edwin B., Alton, Ill	13	15
Parke Arthur Western Springs, III.	31 85	Sherman John Minneapolis Minn 5	7	Whiteside, Mrs. T., Julian, Calif.	11	16
Parker, Geo. W., Bloomington, Ill.	2 3	Shipley, Oliver C., Baltimore, Md. 14	23	Wilke, John H., St. Paul, Minn.	*7	17
Parkhurst, Earl D., Berkeley, Calif.	2 3	Shrader, John J. S., Glenmoore, Pa. 6 Sickels, H. A., San Francisco, Calif. 16	10 28	Willard, W. R., Toronto, Canada	2	2
Paschon, H., Haddon Heights, N.J.	2 3	Sicora, R. G., Minneapolis, Minn. *8	17	Wilson, Mrs. A. B., Asheville, N.C.	2	3
Patterson, Dr. W. J., Petaluma, Cal.	9 14	Simmons, G. C., Salt Lake City, U. 4	5	Wilson, Henry L., Carbondale, Ill.	2	4
Pearl, W. T., Tulsa, Okla.	3 4	Sloan, Mildred, Los Angeles, Calif.	3	Wittman, N. E., State College, Pa.	3	3
Pearsall, G. S., Honolulu, Hawaii	2 2	Sloan, Orrin W., Los Angeles, Calif. 2	3	Wohlrabe, R. A., Seattle, Wash	2	3
Perry, Jacqueline, Honolulu, Hawaii	2 3	Sm. L., Port Arthur, Ont. Canada 3	12	Wolf, Julius, Chicago, III	2	4
Petch, S. M., Mt. Vernon, N. Y.	2 4	Smith, Cyril F., Dartmouth, N.S. 25	59	Wolf, Paul J., New York, N. Y.	24	48
Pett. Dennis W., Bloomington, Ind.	2 3	Smith, Cyril F., Dartmouth, N.S. 25 Smith, Edith Stewart, New York, N. Y	18	Wolfson, F. R., New York, N. Y.	11	15
Pfalzgraf, Laura, Asheville, N. C.	2 2	Smith, Forster R., Palo Alto, Calif. 5	9	Workman, K. L., Los Angeles, Cal.	2	4
Pickard, D., Warrington, Lancs, Eng.	2 2	Smith, Janice G., Buffalo, N. Y 3	6	Wright, Richard B., Akron, Ohio	3	10
Pillsbury, F. C., Pittsfield, Mass	2 2	Smith, R. J., San Diego, Calif 2	3	Wy, Esther C., Washington, D. C.	3	8
Pitt, Howard C., Long Beach, Calif.	4 3	Smith, Dr. S. W., Indianapolis, Ind. 27	61	Yager, L. A., Bozeman, Mont	2	4
Pluta. Louis W., Chicago, Ill	6 9	Smith, Wells W., Salt Lake City, U. 4	8	Young, D. W., Roselle, N. J.	5	5
Muench, E., Santa Barbara, Calif. Mumm, Jacob, Anabeim, Calif Munch, Betty, Woodhaven, N. Y. Murphy, Sherwin, Chicago, Ill Murphy, Roy H., Whittier, Calif Murray, Thos. F., Rochester, N. Y. Nelson, June M., Decribeld, Ill Newhart, R. E., Los Angeles, Calif. Newhart, R. E., Los Angeles, Calif. Newhart, R. E., Los Angeles, Calif. Nievon, P., New York, N. Y Norgaard, Mrs. E. D., Los Angeles, Norgaard, Mrs. E. D., Los Angeles, Calif. Nipkow, P., New York, N. Y Norgaard, Mrs. E. D., Los Angeles, Calif. Nipkow, P., New York, N. Y Norgaard, Mrs. E. D., Los Angeles, Calif. North Mrs. Comport, Mrs. E. D., Los Angeles, Calif Pagenstecher, A., Biltmore, N. C. Pagenstecher, A., Hardon Heights, N. J. Paterson, D. W. J., Petaluma, Cal. Pearce, B. J., Loan Crext, England Pearson, Emil, Redgrante, Wisc. Pearry, Jacqueline, Honolulu, Hawaii Pearson, Emil, Redgrante, Wisc. Perry, Jacqueline, Honolulu, Hawaii Pearson, D. M., Warrington, Lance, Engley, Calif. Plaister, Marie, Minneapolis, Minn. Plett, Loward C., Long Beach, Calif. Plaister, Marie, Minneapolis, Minn. Pollack, L. R., San Francisco, Cal. Polnoccop, Dr. R. B., Scardale, N.Y. Pomcroy, Dr. R. B., Scardale, N.Y.	2 2 17 28	Smith, Forster R., Palo Albo, Calif. 5 Smith, Janice G., Buffalo, N. Y. 3 Smith, O. W. R., Toronto, Canada 4 Smith, R. J., San Diego, Calif. 2 Smith, Dr. S. W., Indianapolis, Ind. 27 Smith, Vernet. Petaluma, Calif. 2 Smith, Vernet. Petaluma, Calif. 2 Soper, R. W., Port Arthur, Can. 2 Soule, Mildred, New York, N. Y. 2	42	Vandeen, Gro. W., Chicago, Ill., Van Der Hoop, W. Hamilton, Mich Van Meter, J. T., Wethersheld, Van Meter, J. T., Wethersheld, Van Baalte, Ben, New York, N. Y., Vignale, A., New Tocorbo, Canada Vogale, Raymond S., St. Louis, Mo. Vogan, San J., Tocoroto, Canada Vogale, Raymond S., St. Louis, Mo. Volker, H., Vilssingen, Holland, Walgreen, Mrs. C. R., Chicago, Ill. Walker, J. D., New York, N. Y., Walsh, Mrs. T. L., Arssa, Calif. Walker, E. Lou Angeles, Calif. Walker, L. Louis, Marghes, Galif. Wasserman, J., W. New York, N. J. Ward, V. E., Angels Camp, Calif. Wasserman, J., W. New York, N. J. Watts, Gaylord A., Detroit, Mich. Webb, Rand, Beaver Falls, Pa. Webber, C. S., San Leandro, Calif. Weber, Rennie I., Chicago, Ill. Webr, Rennie I., Chicago, Ill. Webr, Rennie I., Chicago, Ill. Wells, Joseph C., Chicago, Ill. Wells, Joseph C., Chicago, Ill. Wells, Joseph C., Chicago, Ill. Wells, Frederick C., Chicago, Ill. Wells, Frederick C., Chicago, Ill. Wells, Joseph C., Chicago, Ill. Wells, Frederick C., Chicago, Ill. Wells, Jones B. Weils, Frederick C., Chicago, Ill. Wells, John H., St. Paul, Minn. Wilke, John H., St. Paul, Minn. William, David, Owego, N. Y., Wilson, Mrs. A. B., Asbeville, N. C., Wilson, H. R., A. B., Asbeville, N. C., Wilson, H. R., B., Carbondale, Ill. Wolf, Paul J., New York, N. Y., Wolfson, S. M., Ne	12	19
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### BENEFITS FOR ALL

### COLOR DIVISION, PSA

The Color Division has been one of the fastest growing divisions of PSA in recent years. Every effort is being made by Division personnel to match this growth with services designed to be helpful to all color interests. No special feet are charged the Color Division membership for any services provided. Small fees are charged for some activities to individuals and clubs not affiliated with the Color Division. In the following paragraphs, we classify these services so that the reader can see at a glance how they benefit all members:

If you are a member of the Color Division, you receive bimonthly, the Color Division Bulletin filled with important news items and helpful hints on color photography. You also receive the "activities-benefits-services" list, which outlines approximately 25 activities in which you, individually or through your local camera club, can participate. All this is in addition to the monthly PSA JOURNAL and all supplements issued.

If you are a transparency (color slide or larger) maker, you have available a series of five competitions annually with a criticism service, and a fine group of awards (no fee for C.D. members, outsiders pay \$1.00); you can benefit from receiving for study the Exhibition Slide sets with type-written comments by leading slide makers; you can enroll in a slide circuit, or a slide study group, and can receive special Slide Instruction Sets. You may borrow well-known books and various photographic Annuals from the Color Division Library.

If you are a color print maker, you have available a traveling Color Print Set which shows examples of color printing processes, a Color Print Service to give help in solving print-making problems, and a series of three (per year) Color Print Competitions where competent judges evaluate your work, and award medals and ribbons. All at no extra cost except mailing charges, if you are a Color Division member.

If you are a member of a Color Division affiliated club (or wish your club to do so) check your officers on taking advantage of the following: 1) The National Club Side Competitions (five annually) with plaques, medals, and ribbons for winning clubs and individuals (free to C.D. members, outsiders pay entry fee); 2) The Side Circuits for Clubs which enable each club to compare efforts with other clubs throughout the country; 3) The Color Print Set for Clubs which is a collection of 20 prints representing all the better known processes as well as hand coloring; 4) The Club Side Set Exchange Directory, which enables clubs to exchange sets of color slides for study and approval; and 5) The International Slide Set Exchanges and circuits which enable American clubs to see the equivalent work being produced elsewhere in the world.

If you are a stereo slide photographer, you can join the Stereo Slide Circuit, and benefit from the work and suggestions of other stereo enthusiasts throughout the country.

If you are interested or active in color slide or print exhibition work, you should know that the Color Division establishes and maintains checks on exhibitions for the protection of contributors. Such standards include a time limit for the return of entries, prompt issuance of notification cards and catalogs, and an optimum screen illumination so the slides will be presented at their best. When exhibitions meet these requirements and recommendations, their contributors become eligible for listing in the Color Division's "Who's Who in Color Slide Photography," the only such list now compiled and published. Exhibitions meeting certain more rigid requirements are given Special Recognition and are supplied with special Color Division needlas to be awarded winning contributors at their next exhibition. In addition, we have services for both new and established color exhibitions, including organizations and operation information and a mailing list of 3,000 leading exhibitors. Closely allied to the annual PSA Exhibition is the awarding of the Clerk Maxwell Trophy for the best color print of the year, sponsored by the Color Division.

In order that our members may receive proper recognition for outstanding photographic achievements or for notworthy services to photography and photographic organizations, we have an Honors Recommendation Committee which not only acts in an advisory capacity but also watches to see that no worthy person is overlooked. There is also the Awards Committee which recognizes achievements in color photography both within and outside the Society by awarding the Color Division Medal.

And still more: The Color Division maintains a testing service for its members on various color processes, films, etc. Finally, for both clubs and individuals who wish to dress up their slide presentations, there is a beautiful membership slide provided at cost (15 cents) plus mailing.

If you are a member of PSA but not of the Color Division, all that is necessary to become a Color Division member is to send \$1.00 to PSA Headquarters, 2005 Walnut Street, Philadelphia 3, Penna. giving name and address and specify that the dollar is for Color Division membership.

If you are not now a Society member, fill out the membership application blank below being sure to specify Color Division affiliation, and forward it together with \$10.00 to the address shown. If affiliation with other Divisions is desired, always a good investment, mark the application blank to show the extra affiliations and enclose a dollar for each additional Division specified.

	(Keep Th Received Address	NAME Mrs. Miss		
8	This!)	ADDRESS	DATE	
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on the application	Date	Please enroll me as an Active Member of the have checked. Also enroll me in the addition Color  Motion Picture  Nature  Total enclosed	nal divisions circled be	flow at \$1 each per year.
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PSA		Camera clubs, studios, business fir apparatus and supplies are eligible MAIL TO The Photographic Society	for special memberships.	Ask for information.

## On Writing Articles on Photography

D. WARD PEASE, FPSA

HE WRITING of articles for photographic publications can be quite interesting because of the breadth of subject matter that can be treated. There can be the usual run of descriptive or how-to-do-it material on technique or composition: there has been a lot of biographical, or how-so-andso-did-it-with-illustrations; once in a while we get something inspirational or thought provoking. Still another phase has to do with the argumentative or fanning-the-flames-of-contro-

versy type.

Whenever I run into something in this latter style I wonder why it was ever written. There must be enough of the blood-lust in a certain percentage of us who want to read that type of thing or the writers would not write it and certainly the editors would not pay for it. I also think that some of those who write articles for magazines must do some controversyfanning themselves just to have something more to write about at so-muchper-page. I suspect that the average photographer reads the stuff just to pass the time of day. When he gets through, is he all heated up to the point where he wants to jump into these pseudo battles? I wonder? I rather suspect that the usual reaction is of about the "So What?" degree

What are some of these controversies which periodically clutter up the pages of photographic literature? I can think of several which have reared their heads in the past. One had to do with subject matter: did it have to be inherently pleasing or could any type of subject matter, no matter how uninteresting or even repulsive, be made into something worth while by good photography? One side of this argument was known as the "Ash Can School " of thought and I believe that the whole business invaded photography from the field of painting. If I am not mistaken, the entire mess has retreated-into the ash can.

Closely related to this was the fuss that arose when someone invented a new name for something which had existed since there was any photography. This new name was "Documentary Photography" and immediately the battle was joined as to whether this covered a new form of art or just attempted to glorify the snapshot. Perhaps fortunately, the proponents of the first viewpoint took care of the whole matter by going slumming with their new mouthful and promptly crawled into that same ash can, and I guess that is just about where that situation rests now. Good record, reporting, news and similar forms of photography have gone on and progressed in their own way and Documentary" is scarcely heard from today.

A decade or so back there was quite a bit of heat in the subject of "Pictorialism vs. Purism." One would think from reading some of the things written at that time that between the obviously manipulated paper negative or bromoil on one hand and the completely unmanipulated "purist" photograph on the other hand there was no middle ground. There is not so much heard on the subject now, and I think that it is probably because we all realize that actually there is no such thing as unmanipulated or uncontrolled photography. The exception might be in the case of the complete tyro who does not yet know what it is all about. We realize that the difference between the two extremes is one of degree only and that

the way to better pictures by photography is to adjust the degree and character of control to the case in hand. This is more likely to be governed by the abilities and imagination of the photographer than by any cult or dogma to which he may subscribe.

If each controversy were discussed at length, no one would read it all, so let's just list some examples and let

it go at that:

Print quality vs. prints with some imagi-

Originality vs. following the crowd. Hand colored photographs. Abstractions vs. realism

Today's favorite might be called "Picking on salons and salon juries." There is nothing at all new about this one, only recurrent outbreaks in virulent form might give some newcomers a false impression. Just as in the case of the other arguments, it is the expression of the extreme view that makes reading matter hot enough to attract attention. This is largely a froth on the top and the main current of interest in amateur photography will probably roll right on along without paying too much attention to the

I have a feeling that the powerful influence in the pictorial photography to come is not going to be so much in what a few of us have to say in print. Much of the future of pictorial photography is in the hands of the PSA members now developing their viewpoints with the aid of the Pictorial Division Portfolios. The commentators in those portfolios really wield a great deal of influence on this new generation and it is to be hoped that this power is used wisely and well.

There is one more controversial matter that needs to be settled and that is "Why should anyone write about writing about controversial matters?" I leave the answer to that one up to you. Certainly there is no money in writing for PSA JOURNAL. SO WHAT!

### PSA CONVENTION HIGHLIGHTS

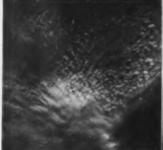
Where did they hang my print? No need to look over several floors in two or three buildings for your prints hung in the 1951 International PSA Salon in Detroit. For the first time, the PSA exhibits will be under one roof on one floor of the same building at the Detroit Institute of Art.

Row A: Cumulus Clouds. Correct exposure is absolutely essential for good tone separation.

Row B: Stratus Clouds, the unphotogenic. A polaroid filter is very helpful.

Row C.

Third altilude: High level, Cirrus clouds, Use filters.



CIRROCUMULUS
One of the rarer forms of Cirrus.



CIRROSTRATUS
A whitish veil with no distinctive features. Produces the "hazy-bright"
light, desirable for architectural photography.—If you want a better picture
of it, get up before sunrise 365 days a
vear.



CIRRUS Usually silky white, these clouds take on warm yellow and red colors after sunset or before sunrise.

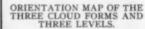
Second altitude: Medium level, Alto clouds. We see more Alto than any other clouds. Their characteristic is a very regular arrangement in layers or groups, such as the familiar mackerel sky.



ALTOCUMULUS
Alto and Cirro clouds are sometimes
difficult to distinguish by forms only.
Always consider their color too.



ALTOSTRATUS Gray or blueish in color, of variable thickness, fibrous in texture. Transmits the sun like through a veil.



Reading these photographs horizontally will enable you to understand the characteristics of the different levels. Reading vertically shows the common features of Cumulus in row A and Stratus in row B. Notice that row C has no common characteristics, as Cirrus is only encountered on the highest level, and Nimbus only on the lowest. There is no equivalent of either one of these two forms on the medium level.

First altitude: Low level Strato clouds. Only Stratocumulus in photographically interest-



STRATOCUMULUS appears in rolls or globular form, massed in groups and detached from the ground. (Compare with Nimbostratus.)



STRATUS the least attractive formation.



NIMBOSTRATUS Cover up your camera and take refuge.

# Clouds for the Photographer

GERDA PETERICH \*

When we were children, my sister always saw all sorts of things in the clouds: animals, figures, faces, scenes from fairy tales, mountains and seas. I was less imaginative, perfectly contented with watching their forms and colors, their swift wind-driven movements. Later, my sister's youthful imagination gave out and her interest fell by the wayside. Only an occasional expression of awe gave proof of her earlier fancy. My liking for clouds grew stronger with each of my long wanderings through nature in spring and fall, each visit to the sea or to the mountains. And, since I became a photographer, it finds expression in the numerous cloud photographs which I take whenever the occasion arises.

What is so fascinating about clouds? Clouds never cease to provide a unique aesthetic experience. Their forms show an unimaginable variety, but their unity is evident as we count only three basic forms of clouds, namely: Cirrus, delicate white tuffs of fibrous appearance; Cumulus, globular masses; and Stratus, layers of clouds. Their shades and textures are intimately related to their forms; and all three, form, shade and texture, are the deeds of the wind. Where do they come from and where do they go? Why does the wind change their appearance constantly, leaving them to rest only on rare occasions?

Clouds are made of water drops, floating in the air. They result from the cooling of the air, usually in the course of an upward movement. But they are not only physical phenomena; they are wonders of immensity, moods and messages of things to come, incalculable, intangible.

The study of clouds and their forms is fascinating, never ending, often bewildering. My knowledge of clouds is only a layman's knowledge, yet the little I know proved to be very helpful when I was catching their images on the negative.

The basic system of clouds is relatively easy to understand. As mentioned before, there are three primary shapes: Cirrus, Cumulus and Stratus; and, in addition, there are three distinctive ranges of altitudes in which these three forms occur:

1. Low clouds, from the ground to 6,500 feet. These are pre-

dominately stratiform, i.e. horizontal layers of clouds: Stratus, Stratocumulus and Nimbostratus.

 Medium high clouds, from 6,500 to 20,000 feet, designated as "Alto" clouds. Both Stratus and Cumulus occur in this height, named Altocumulus and Altostratus.

 High clouds, from 20,000 feet up. Here, and nowhere else, we find the Cirrus clouds.

There is a fourth group of clouds. These intersect the three altitude ranges vertically and are known as clouds of "vertical development." They are Cumuli.

It is important to understand the distinctive characteristics of the three forms as well as of the three different altitude levels, if we wish to use them intelligently in our photography. Cumuli are thick, round and bulky. Their clearly outlined top is usually dome-shaped and light in color, while they are flat-bottomed and dark from the underside. Small domes of similar structure bulge out from all over their surface, reminding us of a Mohammedan Mosque (leaving off the minarets), or of a cauliflower. Cumuli afford the most beautiful play of light and shade, even with "front lighting," when they are located opposite the sun. With back lighting, taken against the sun, their bright edges and dark centers render a striking effect. Illuminated from the side, at ninety or forty-five degrees, they have a highly sculptured appearance. But with or without direct sunshine, they are the photographer's favorites, for they are striking in appearance and sky-filling in size.

Cirrus clouds occur in the higher elevations only and it is difficult to include them in one picture together with the ground. They are like feathers floating in the sky, light and detached. Their substance is ice crystals, which accounts for their silky white brilliance. They are without shading, often translucent, particularly along the edges. They are delicate things, incapable of obscuring the sun, being small patches scattered over a blue sky, or thin veils only.

For the photographer the most troublesome of all are the Stratus clouds. They are the clouds of the overcast, hazy skies, and they form bars, layers or amorphous sheets, without any plasticity, hiding or completely obscuring the sun. On the lowest level they are of a dark gray, which is unphotogenic. In the distance we often see them merge with fog and rain, so that they appear to adhere to the earth. They feel wet and uncomfortable and make us want to stay at home, turning on the studio lights for our creative efforts.

So far, all this is easy to understand and behold: Three basic shapes with distinctive characteristics, and three ranges of altitudes, their characteristics being discussed later in this article. But, unfortunately, clouds

<sup>\*</sup> EDITOR'S NOTE: Gerda Peterich, of Rochester, N. Y., who is mostly known as a portrait and dance photographer as well as a teacher of photography, likes to hike and climb mountains for her recreation. During vacations she takes many photographs of nature subjects and scenes which she uses in an exhibit entitled "Sky, Earth, and Water." The cloud studies used with this article are selected for their value as illustrations and are only a small part of her cloud collection.







Altocumulus, ondulated form. This form is often observed in a V-shaped formation with very regular ripples and banks.

Ragged Altocumulus, taken at sunset after a rainy day. The spectacular glowing during sunset is characteristic of cumulus on the medium level.

These veil-like clouds are very difficult to photograph. A certain amount of over-filtering is necessary to make them stand out at ail. In addition to this over-development or, in the case of roll film, intensification of the negative is advisable.

do not often come in their pure forms. What we get most of the time is a combination of several forms. There are many combined and intermediate forms, bewildering in their names and appearances. We will have to learn two more important definitions, namely: Nimbus (or "Nimbo" as a prefix), and Fractus (or "Fracto"). "Nimbus," meaning "halo," such as in Nimbostratus or Cumulonimbus, as a fibrous texture especially at the edges of a heavy cloud or sheet of clouds, indicative of a cloudburst. Nimbus clouds are the clouds of rain, snow, or hail, even if the latter never reach the ground. "Fracto" means broken up. "Fracto" clouds are the ragged type, torn by the wind. We find Fractostratus and Fractocumulus. Other definitions used in connection with the primary forms are of purely descriptive character and need not be mentioned here.

Now as clouds are classified by their forms as well as by their height, we shall take a closer look at the three ranges of altitude and their characteristics. How do we determine the height of clouds? The prime characteristic in regard to altitude are weight, volume, color and light transmission. Clouds of heavy weight and great volume are found close to the surface of the earth. The higher the cloud, the lighter its weight and the smaller its volume. with Cirrus, the feather-weight cloud, appearing on the highest level only. Clouds of heavy weight and great volume, on the low level, naturally transmit little or no sunlight and obscure the blue of the sky. Hence, they are dark and gray and result in a gray day with overcast sky, most unsuited to photography. The higher we go the lighter in shade are the clouds, Cirrus being purely white. And the higher the clouds, the fewer of them, the more we see of the blue sky. This blue sometimes is reflected in the color of the cloud, and some clouds on the medium level show a distinct bluish cast. At or about

sunrise and sunset determination of height is aided by sun-colors reflected from the bottom side of high level clouds. Long before sunrise they shine in the most beautiful yellow, red or pink, and after dusk, when darkness begins to surround us, their warm glowing colors delight us late into the night.

At this point the reader may want to study carefully the "Orientation Map of the Three Cloud Levels and Forms." Some of the foregoing remarks in regard to lighting, contrast, and color may have rung a bell in the technique-conscious photographer. The following suggestions and description of the writer's technique may be accepted by the reader in full or in part, or may be changed and adapted to his own working methods. They are based on a preference for thin negatives on the soft side, used with a condenser enlarger.

If we wish to take good cloud pictures, we need to be cloud-conscious at all times. I have taken cloud pictures for the last fifteen years, but still miss a few formations in my collection. Outstanding cloud pictures can be taken in fall, when the atmosphere is dry and the light has good contrast. An exception is made with Cumulus clouds, which occur in their most striking forms during the hot season. As to the time of the day, most formations are more clearly defined and better to photograph early in the morning or toward evening, due to illumination and haze conditions. There is one exception, the Fair Weather Cumulus, which is a midday cloud. For the purpose of identification of altitude of the clouds the photographer is urged to include the horizon or some foreground in the negative when taking pictures on the Strato- and Alto-level. It is not advisable to photograph clouds from "interesting" angles. Hold your camera parallel to the horizon. You cannot improve upon nature.

For all outdoor work I use a Rolleiflex camera. With

this 2½ square format I prefer Ansco Superpan Supreme film. It presents the best compromise in regard to speed, contrast, color rendering and resolving power for cloud photography in particular and for a rollfilm camera of this size in general. With cut film, the variety of suitable, medium speed, panchromatic material is great. Occasionally, a negative material of greater contrast—always coupled with lower speed—may be employed to advantage, especially with the Stratus of the lower levels, i.e., on dull days. Ortho film, useful in taking pictures of fog, will render rain and Nimbostratus dense and intensify the feeling of wetness of a rainy day. On rare instances a film of less contrast and greater sensitivity to red may be advisable for catching clouds after sunset. Then Kodak Super XX roll film is a good choice.

The photographic technique should be directed toward fine detail and good contrast. The question of exposure needs careful consideration, of course. Your exposure meter is an excellent guide and can be relied upon one hundred percent, even if the reading should be something as fantastic sounding as 1/300 at f/16 with an A filter. There are no problems in metering the sky, as long as you don't point the meter into the sun. But beware

of over exposure. When including foreground, its reading may be disregarded and the light coming from the sky considered solely. This will most likely result in a silhouetted foreground, but exposing for the foreground will invariably render the sky too dense. The usefulness of filters for cloud photography is highly overrated, and over-filtered or "dramatized" skies a familiar misconception. A Polaroid filter proves to be very valuable in controlling glare, the greatest hazard to good cloud negatives. Correct color rendering is not too much of a problem. Modern panchromatic material is sufficiently corrected for blue to give good separation of compact light gray or white clouds against a clear blue sky. It is essential, however, that the exposure be kept on the short side, as the slightest amount of over exposure tends to result in lack of tone separation. In general, it may be said that the silky white and thin Cirrus clouds demand a G or even an A filter, for with them there is a great deal of deep blue in the sky which we will want to translate into an equivalent gray shade. For clouds of the medium altitude, particularly Altocumulus, a K2 filter will suffice, though occasionally they may profit from the qualities of a G filter. This depends upon the contrast

### CUMULI, CLOUDS OF VERTICAL DEVELOPMENT

CUMULO-NIMBUS Cumuliform on top with nimbus on the bottom, this type of cloud brings a cloud burst of rain, snow or hail.



FRACTO CUMULUS Windswept parts of cumulus which constantly change their form.

F A I R WEATHER CUMULUS starts forming in the morning against a clear sky and is at its best around noon. A filter is a must with this formation.

THUNDER-HEAD
Be quick to photograph it, as it changes quickly.

desired in the negative, for yellow, orange and red filters, in addition to darkening their complementary colors, also increase contrast. Finally, clouds of the lowest level, being mostly dull gray with little or no blue sky showing, make the use of a filter almost superfluous. Remember that with whichever filter you choose to work, over exposure weakens its effect, while under exposure enhances it. During the day it is more advisable to take cloud photographs with your back or side toward the sun. At sunrise and subset the camera may be pointed directly into the sun. High winds, especially in fall, may result in camera movement. But, as the camera is always focused on infinity, small f/stops are not essential and, consequently, high shutter speeds can be used.

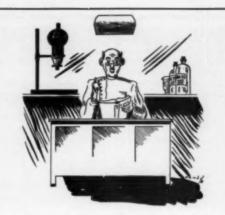
### Fine Detail Essential

As fine detail is absolutely essential in a cloud photograph, the writer uses Edwal 20 for 21/4 square cloud negatives. This developer is unsurpassed in regard to resolving power and detail rendering in the highlights. Unfortunately, these good qualities are often coupled with a loss of contrast, which is felt sorely when there is too little scene contrast to begin with. Cirrus clouds give you this trouble. In this case Victor Intensifier has been employed on Edwal 20 negatives in order to strengthen contrast without loss of detail or increase in grain. Furthermore, for enlarging, No. 4 paper should be kept on hand and a sufficient supply of No. 3. It is doubtful that No. 1 will find any use. A condenser type enlarger renders clouds with greater plasticity than a diffusion type enlarger. To get finest detail in the whites, it is sometimes necessary to overprint slightly and to use Farmer's reducer afterwards on the print, locally or over-all. A silky-smooth paper surface and a blue-black tone seem to be appropriate.

Thousands of cloud photographs are taken from the air and from the ground, mostly for scientific purposes. Navigators, aviators and scientists know of the grandeur and pure beauty of the skies. Few photographers do. Did you ever stop and think how much of the scenery lies above the horizon? How its moods are dominated by clouds? Doubtlessly you notice the weather before you start shooting, but do you make it a part of your photograph? Or do you use clouds just to fill up the sky, for "added interest?" If so, you may just as well print them in in your darkroom. But, even then, won't you study their forms, so that you combine them with scenery where, by characteristics and mood, they really do belong? Let your pictures reflect their sublimity, lest your efforts be wasted.

The writer is indebted to Dr. C. L. Dow, Professor of Geology, Ohio University, and Dr. N. R. Heiden, Instructor of Geography, University of Rochester, for valuable suggestions and corrections.

This article is based on the information given in the U.S. Government pamphlet, W.B. No. 956, on Cloud Forms, published by the U. S. Department of Commerce, Weather Bureau. Obtainable from the Superintendent of Documents, Washington, D. C. For further studies the writer suggests Thomas A. Blair, Weather Elements (Prentice-Hall Inc., 1943, N. Y.) pp. 57-69.



James Angross Is this your idea of Johnny?

### What Do You Think?

What do you think Johnny Appleseed looks like? Is he a hayseed or a long-haired scientist? Is he young or old?

The Pictorial Division is offering free PSA dues for one year to the person making the best character portrait of Johnny before the Detroit Convention, October 10-13, 1951.

All entries will be judged at Detroit on Johnny Appleseed Day. On that day all PSA Divisions will unite for a big session handled along the lines of this column.

For further details watch the JOURNAL or write to W. E. Chase, 4164 Federer Street, St. Louis, Missouri. THE EDITOR

#### PSA CONVENTION HIGHLIGHTS

PSA Salos-Prize winning prints. Loan Exhibits. A regular galaxy of photography at its best-nature, pictorial, color, technical and the new photo-journalism competition. Showing of slides and movies.

Is Stereo your latest love? Then attend the PSA Convention in Detroit October 10th to 13th and be on hand for the brand new Stereo Program.

What's New? Listen to the latest technical papers at the Convention. New advancements in photography will be revealed.

Johnny Appleseed-rural character as famous as a photographer as Paul Bunyon was a woodsman. This fabulous personage will appear in person at the Convention. Johnny has promised to answer any and all questions, including those about the farmer's daughter. He will be assisted by the following experts:

Pictorial-Adolf Fassbender, Hon. FPSA, one of the most

honored persons in photography.

Photo-Journalism—David Eisendrath, Jr., APSA, whose keen sense of humor will keep you interested as you learn of his technique.

Color-Art Underwood, FPSA, top-notch color expert, who knows all the inside dope.

Technical-Adrian TerLouw, APSA, oracle of knowledge from Nature-H. Lou Gibson, APSA, author, lecturer, versatile

Motion Pictures-Vincent H. Hunter, APSA, ardent movie maker.

THIS ARTICLE is addressed to all movie makers who like to recall, with a touch of nostalgia, the "old ivy covered walls" loved so well in the golden haze of college days.

It really doesn't matter what size your alma mater was, how many students she had enrolled, nor to what athletic prowess she claimed title. The main concern—in fact the only concern—is that she is your Alma Mater.

Perhaps this article should be restricted to just the male movie makers, for can any female carry in her heart the deep emotion that we members of the bearded sex experience when we think of the old school? Perhaps in all fairness, the author must disqualify himself as being able to interpret the type of feeling that alumnae have for their old school as compared to that which the alumni experience.

But putting aside sentiment for the moment in lavor of the common sense of having an adequate pictorial record of the school of your choice, here are some pointers on how to construct an effective movie.

Most of us either neglected to make a motion picture record during our residency at the institution or were not equipped (mechanically or financially) to do so at the time. Nevertheless, class reunions, alumni meetings, and (if she is known for her skill on the gridiron) the autumn



Selection of the best lighting effect helps to enrich the enchantment of a film on college days. This is a back-lighted scene of the campus with the direct sunlight masked from the camera lens by trees and foliage.

Every campus in the country has its one hallowed spot from where traditions stem. This would be an appro-

# Filming Your Alma Mater

HERBERT A. MACDONOUGH \*

football season bring the faithful back to the campus at one time or other. Frequently, vacation trips may be arranged to include the college town on the itinerary. Regardless of season, the serious amateur movie maker will find some opportunity to return to his college campus and be prepared to photograph representative material.

The happy coincidence that most class reunions are held in May or June and all football is played in the colorful autumn months avails the movie maker of the best in outdoor lighting conditions for color filming along with pleasant weather. There may be midwinter carnivals or similar traditional activities especially in the northern schools that would require making some sequences in less pleasant weather to round out the picture. On the other hand, those alumni of southern schools may find their filming expedition a worthy reason to take that winter vacation down in those sun kissed areas at a time when others of us are staying indoors tending the fires or battling the snow drifts.

Wherever your alma mater, certainly you will revisit her campus to make a pictorial record for your film library—a record that will become truly priceless as the years pass.

football season bring the faithful back to the campus at priate opening for your film. Since these spots are most one time or other. Frequently, vacation trips may be commonly outdoors, they present virtually no problem



Here a scene of students chatting between classes on steps of classroom building. Unposed natural scenes like this inject a note of realism in the finished picture. A day in spring is suggested by the picture atmosphere.

<sup>\*</sup> Ansce, Binghamton, N. Y.



Be sure and make scenes of the band parading between halves. Also make shots of the cheer leaders and crowd reactions, both long shots and close-ups.

as to exposure. Your main concern will be to capture by composition and angle of lighting the feeling that is associated with this symbolic place. As far as possible, this scene should be uncluttered even to the extent of having no persons appear in it. Whether it is an archway, a building, a pathway across the campus, or the statue of the founder, this is the scene that establishes the uniqueness of your alma mater setting it apart from all other schools.

A preferential treatment for such an opening scene is to superimpose the main title and then fade the title leaving the scene on the screen as your introduction. Some may prefer a more conventional title card with the insignia of the school as the background but the author prefers to use this device for the end title with appropriate decoration in the school colors.

Since your film is to serve as a record of familiar scenes and places as you recall them, be sure to photograph the older buildings before the erosion of evolution takes them from the campus. The recent high geared expansion of higher educational programs has given rise to a large building replacement program. As a result, many of those old structures that housed fond memories for the students who studied therein are being torn down to provide for modern units. If you fail to get an adequate record of these landmarks at your first shooting session, you may never again have the opportunity.

Then, too, besides the axes of demolition crews, newspaper items weekly attest to the toll which fire extracts from older buildings on college campuses and further reduces the probability of future picture making opportunities. Don't commit that cardinal sin of movie making by saying that you will shoot the material the next time you are in town.

All colleges have one thing in common, and that is students. They go to class, walk along campus paths holding hands, sit on steps, lean against colonnades, cheer at games, wear the same type clothes and shoes and, in general, lend human interest to the campus. By all means, include sufficient footage of the simple everyday actions of the student body. A telephoto lens of medium focal length will serve you well in getting some of these scenes without an apparent intrusion or the usual self-conscious looking-into-the-lens effect.

If your filming expedition is in the fall when the new term is starting, you will find the customary freshman week provides an excellent field day for picture making. While times do change and the devices of the upper classmen in introducing the newcomers to college life change with them somewhat, the smack of the paddle on the appropriate portion of a freshman's anatomy still produces the same type expression decade after decade. In this type of filming, be sure to include the build up, the action, and then the reaction in completing your sequence. For the last, a close-up of the victim's face at the moment the blow lands will be the highlight of the entire sequence. Then there are the water games, the tug-of-war, and the flagpole rushes that provide a variety of material for keeping up the pace.

Should your alma mater be one of those "gridiron greats" with a mammoth stadium and a 150 piece marching band, you will find yourself in a movie maker's glory at the homecoming game where the traditional rivals meet. But remember, since you are not making a football picture this time, you only need excellent selected scenes of this phase of college life to round out the whole fabric. So while you may shoot extensive footage of the game, be judicious in your editing for the final reel. The kickoff, one or two spectacular plays, a completed pass perhaps, followed by the reaction scene of 40,000 faithful alumni springing to their feet, the marching band swinging through some intricate formation, and the final score showing victory for your team usually suffice.

There is a leeway as to how much material of any category you should include and, if your college happens to be one of the leading athletic contenders in the country with "Bowl" victories to its credit and a claim on the mythical national title, it may be entirely appropriate to have somewhat more football or other sports footage included.

Throughout your entire picture, be certain to watch the framing for each scene. Most college campuses have a wealth of lovely trees and shrubs, arches and colonnades that may be employed with great effect in preserving the mood and atmosphere of your picture. Whether yours is a southern school with its Christopher Wren architecture, a midwestern state university with its Gothic structure, or a Pacific Coast college clearly revealing the Spanish influence, you will do well to make appropriate use of the perspectives of forms and lines in setting up your scenes.

While most movie making rules call for an avoidance of too much footage showing only static landscapes, a picture of the type you are filming does permit a departure from the rule. You want to recapture in your memory the places and the sights that you saw daily as you walked along the campus pathways. To do this in later years, you want to see them again on the screen for a sufficient length of time so that responsive chords will be struck within your memory. This whole picture is of a very

personal and private type—probably even your wife will find it not too interesting, especially if she did not attend the same college. Maybe only some other alumni will really have a true appreciation of your effort.

This is not to be a publicity picture to drum up business for the old school. Leave that type to the public relations department who is more qualified anyway for that

sort of thing.

A fitting conclusion to any college career or movie is the great day of graduation. It's a solemn, yet colorful, occasion and being in June—the ideal month for outdoor color photography, so the experts tell us—the mechanics of filming are greatly simplified. As the capped and robed seniors file past the prexy to receive their diplomas, you may slowly dissolve into your end title.

This author, however, prefers to return once more to the opening scene of the hallowed spot and then fade into the end title which is superimposed across the great seal of the college on a background of the appropriate

colors.

Here is one movie you can make in which you do most of the shooting with your heart rather than your head.



Highlights of important games and plays add a natural touch to a college film. A telephoto lens (63mm) from the players' bench brings the players and their expressions intimately close to your audience.

It can dare to be different—will you try it? AVE ATOUE VALE fellow filmer!

### Photography as a Manual Art Therapy

BETTY SCHEYER

When photography was included in the activities of the Manual Arts Therapy program under the department of Physical Medicine Rehabilitation Service in the Spring of 1948, the executives and therapists at the Veterans Administration Neuro-Psychiatric Hospital at Los Angeles, California believed patients would benefit generally from it. But it exceeded their hopes when in addition, patients actually contributed to the experimental and creative fields of photography and chose it as a vocation. The results shown in photography as an artistic expression and the implications it had for a patient's recovery were significant. Some patients applied latent abilities and talents, and this revealed what one phase of Manual Arts Therapy can do under Physical Medicine services.

In explaining the service, Dr. L. D. Mollo, Psychiatrist and Chief of the Physical Medicine Rehabilitation, said,

The term Physical Medicine is now fully recognized as a medical specialty by the American Medical Association. I like to think of Physical Medicine in a neuro-psychiatric hospital as the medical service of bringing physical agents (Hydrotherapy, Thermotherapy, etc.) occupations, physical and mental activities (Woodshop, Photography, etc.) to neuro-psychiatric patients in an environment which meets the needs of the patients for recognition and affords opportunities for adjustment to reality.

The work is carried on by skilled individuals who work under medical supervision and as such are referred to as therapists. In this hospital out of the 2,100 patients being treated nearly 90 percent are receiving the services of Physical Medicine. A small group who have proven their adaptability and aptitudes are enrolled in the photography classes.

Before a patient has been admitted to study photography he is well along the road to recovery, and he has passed various interest and aptitude tests. Certain tests are for eye and hand coordination while others are taken to determine the patients' other aptitudes. In photography one should have at least two interests which are scientific and artistic, and tests are given to determine whether patients have such interests. When it is considered that one of the Manual Arts may become a patient's chosen vocation, it is understood why tests are carefully made. Several patients followed photography as a career after they were discharged from the hospital.

At the end of a year's time an exhibition of prints made by patients at the hospital was exemplary of photography in the Manual Arts Therapy. Various classes of subjects were photographed by the patients and made an interesting and varied review of their work which embraced photographs of texture, landscape, and abstract, as well as purely artistic photography. Chris Kealey, photographic therapist and instructor, stated that even beginning students in his classes had contributed to the exhibit

There are several ways that PSA members may help in projects of this kind. One is described on page 40 of Part 2 of this issue. The other is through the Volunteer Service Photographers, 292 Madison Avenue, New York 17, N. Y.



An Abstraction by a Patient.

by turning out prints of negatives which he had made for a display illustrating the treatment aims of Corrective Therapy, Occupational Therapy, Educational Therapy, Manual Arts Therapy (Radio Repair, Machine Shop, Auto Mechanics, Woodshop, Poster and Sign, and Photography) and Physical Therapy. Patients worked as a crew to get the display assembled. From the shooting of the pictures to the printing of them there was team work which brought attention to the steps taken in completing a project.

As Chief of Manual Arts Therapy, LeRoy B. Phelan told of an interesting thing which happened when one of the weekly photographic field trips were held at his home on the ocean front. His young son, Joe, was quite peeved at being instructed not to play on the beach. A patient, with camera in hand, was alert to catch the boyish expression. An informal portrait was made of Joe, and Mr. Phelan was so pleased with it, he called it "Frustration." On field trips there is no assigned subject. The patient is "on his own" and can choose what appeals to him most. These shooting sessions acquaint the students with outdoor lighting conditions.

Part of the program is built around studio lighting, at which time student models come to the hospital. A local model agency graciously sends out models who are willing to pose for the experience gained. Afterwards the real work begins in the darkroom.

One of the most interesting things about the photographic laboratory is that patients can learn by actually doing and helping others. In allowing an advanced student to impart information to a beginner, he will review his own knowledge and gain responsibility. Complete freedom is maintained in this efficient darkroom of professional equipment. If a patient wishes to do some printing in connection with a whim, or as a hobby, or to try some black and white prints from a Kodacolor negative, he may do so. There are five enlargers and a contact printer allowing several people to work at one time. Usually there are never more than five in the darkroom. Beginners in photography are invariably ushered into the darkroom as a starting point, but theory has its place too.

On assembly days well known speakers are presented

to photography students. Such people as Horton Churchill, head of the photography department of the Los Angeles *Times* newspaper, have come to the hospital to talk about the various phases of photography. Other projects consist of showing slides, motion pictures, and as a visual aid, taking a camera apart to demonstrate its mechanism. Patients may combine other courses in Manual Arts Therapy if they wish. One is studying writing and photography and plans to illustrate his articles when he completes his training.

When patients are discharged from the hospital they are permitted to take all their negatives with them. Their prints of the work they produced remain with the hospital, and may be used for illustrative purposes, for teaching and exhibition. They are kept in the files and if a duplicate is needed very often another negative has to be made from the print. No more prints are made than are actually needed. Sense of values are impressed in this way and nothing is carelessly wasted. Care of negatives and filing of them is also a part of the training. Even the use of a paper cutter can have a purpose. Things are kept according to system and patients must do their part to maintain order, and keep tools in proper places.

Most of the patients have a high intelligence as revealed on the tests they take. One patient in machine shop work was the author of a book on mathematics. He also completed a project demonstrating power (in miniature) of the force of a geyser.

Manual Arts Therapy has shown it can be an important contribution to patients who are receiving services of Physical Medicine Rehabilitation. And the new activity of photography in this program has an established place.



An Example of a Patient's Work.

### "Take It Easy"

ROBERT M. BEER, APSA

An honest confession is good for the soul. My photographic endeavors and interests have gone through a cycle that is doubtless familiar to many others. If the truth were told most professionals would admit that a time comes when routine assignments and involuntary darkroom tasks bring about a sullen objectiveness that transcends the fascination and challenge offered by serious photography.

About eight years ago I reached that stage of weariness. Fifteen years ago I was intensely interested in every phase of photography and spent every spare moment making exhibition prints. It assumed all of the picture assignments for my newspaper, did all of the darkroom work and later installed and operated photo-engraving equipment unassisted. It was only natural that pleasure and satisfaction were subrogated with monotony and drudgery. A midnight call from the police or fire departments became an abominable nuisance instead of a thrill.

The transformation was slow but certain. I became fed up with the practical application of photography . . . not because of laziness but because of a redundant responsibility that should and could belong to others. Even-



The Parthenon—the finest architectural specimen in the world. The stone in the foreground produces interesting contrast without destroying the point of interest.



One of the buildings on the Acropolis. Exposure according to meter, 1/100 sec. at f/11, Plus X film, orange filter, developed in DK-20 normal time.

tually, my darkroom equipment and cameras were transferred from home to the newspaper.

The Graflex, Graphic and view camera were not supplanted with even so much as a folding Kodak for personal use. Although a keen interest in technical aspects of the art was never lost, inactivity proved to be a grave mistake. As an avocation my photography declined to the reading of photo articles and the discussion of pictures with active amateurs and professionals.

A group of newspaper and radio people were invited to be guests of the United States Navy two years ago and I was billeted in the huge aircraft carrier Franklin D. Roosevelt for a three week cruise in the Caribbean. It suddenly occurred to me that I should take along a camera of some kind. The thought of lugging the old professional equipment along was revolting, so I phoned Lloyd Varden in New York and asked him to pick up a small camera for me. His choice was a Rolleiflex, the smallest thing next to a 4x5 Graphic that I had ever used. Having been weaned on cut film and large negatives this little box was looked upon with strong skepticism. However, the Rollei went with me in the hope that some snapshots could be brought back for the record.

There was a joyful awakening when those dinky  $2\frac{1}{4}x\frac{2}{4}$  negatives produced big prints of excellent quality. In spite of all I had heard and read about the virtues of small cameras, I had never been convinced until now that they could be used with serious intent.

Last November another invitation came from the Navy
... this time to be the sole guest of my friend Vice
Admiral John J. Ballentine in his flagship U.S.S. Des
Moines with the Sixth Fleet in the Mediterranean. I was



A scene at sunrise made from the deck of the Des Moines.

flown from Washington, D. C. to Newfoundland, the Azores, North Africa, Rome and Athens. At Athens I was greeted by the Admiral and assigned to his quarters aboard the heavy cruiser for a six week cruise and a tour of Europe. A grand opportunity was at hand and the once scorned little Rollei was with me.

There is a point in relating all of this because I had learned, as others can, that fun with photography can be regained if one takes it easy. No longer was I loaded down



Shot from the Temple of Olympus (Zeus) showing the Temple's remaining pillars and a broken one in foreground. A mile or so away is the Acropolis.

with cumbersome camera equipment. There was no tripod and carrying case . . . the implements consisted of the Rolleiflex and a small gadget bag that held nothing but an exposure meter, three filters and a supply of roll film. Flash gun and bulbs were left at home. Experience had taught that these few things are adequate unless the entire trip is to be dedicated to arduous picture making. I was determined that Europe was to be seen with the raw eve and not through a finder.

A few of the results of this approach are shown herewith. I returned with the pictures I wanted and I didn't knock myself out getting them. Nothing was missed in Greece, Italy or France (including Paris) because of an obsession to make a complete pictorial record and shoot a

thousand negatives.

Both fine grain black and white and color film was used. The black and white was developed in DK-20 in the ship's photo-lab and the color was mailed to Binghamton. An orange filter was selected for most of the black and white shots because of its relatively low factor and strong "corrective" characteristics.

Exposures were made according to the book. The meter was set with proper filter compensation and shutter

speed varied from 1/25th to 1/200th.

In Athens light conditions were ideal and I was blessed with two other rare advantages. The vivid blue sky was patched with billowy cumulus clouds and our Navy party of six was the only guided group visiting the ruins at the time.

With such luck full advantage of the clouds was taken and the absense of people enabled me to get pictures that were neither snapshots nor postcards. By use of effective immediate and intermediate foregrounds the scenes were given an illusion of depth and perspective. Had there been many tourists these pictures would have been cluttered with people . . . thereby placing them in the snapshot category. Freedom to compose with clouds and desirable foreground removed them from the record class. The following day the whole fleet visited the ruins and the sky was completely bald.

It has been a revelation to me that photography can still be a source of relaxation and fun. Not being cursed with unnecessary trappings contributed much to a thoroughly enjoyable and effortless procedure. To these poor souls who are burned out due to an overdose of photography I recommend a formula that contains no new ingre-

PSA CONVENTION HIGHLIGHTS

dients . . . just take it easy!

GREENFIELD VILLAGE FIELD TRIP — RAIN OR SHINE

IF THE SUN SHINES, browse around this famous early American Village with local guides to show you the prize winning spots. IF IT RAINS, we stay in the spacious 14 acre Museum and photograph everything from the smallest light bulb ever made to a high 750 ton gas steam engine. Subject matter to suit every taste. You'll want lots of film for the Greenfield Village Trip. Transportation furnished.

## An Easy Method of Spray-Coating Prints

H. J. ENSENBERGER, APSA

Waxing and coating a print with some type of finish has been practiced for years by amateurs and exhibitors, and is advocated by a number of well known, advanced workers. There are several reasons for doing this among which the following are probably the most obvious: 1.) To conceal spotting and control work. 2.) To enhance general appearance. 3.) To provide some protection from abuse.

The effects of pencil or pigment spotting, etching, and mediobrome are usually self-evident on a print; and the customary method of counteracting these is by application of some kind of finish or coating. Many prints lose that deep richness of tone after they are dried; some of it may be regained and the appearance improved by careful finishing. Rough treatment in shipping and handling will result in scratched or chaffed surfaces; thus, various types of coating or wax are often used as a protection.

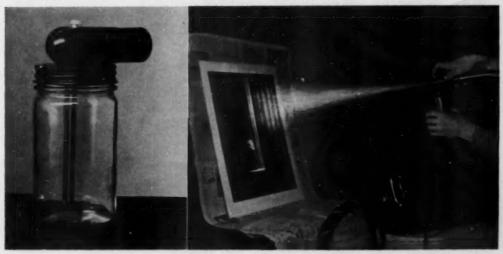
I have experimented with numerous marketed preparations and mixed up several special formulas to meet specific requirements. In passing them on to others, it was found that the difference between success or failure rested mainly in the mode of application. Bits of silk stocking, lintless fabrics wrapped around wads of cotton, soft flat brushes, etc., are commonly used. Some of the "dope" is a bit messy and when the print ends up with an unctuous appearance, the worker is discouraged from further trial. A few workers have developed sufficient technique to apply the "goo" lightly so as to avoid serious damage, if not complete eradication, of their painstaking spotting and after-control work. As a result other methods of finishing were explored.

Methods of spray coating have been used, and a small spray bomb with the coating preparation sealed in has been marketed. Good spray guns and air compressors are too expensive for universal use among amateurs. The bomb is limited in capacity and the cost is relatively high—an obstacle for many workers. Hand sprays have been tried with little success.

The method of print finishing outlined here is one that I have used for some time. It was worked out with the object of eliminating most of the objections of previous methods. I have found it to be quite satisfactory, and the following claims can be made in its favor:

- 1. It is easy to apply.
- 2. A print can be coated in a matter of seconds.
- 3. It can be put on evenly all over.
- 4. It dries in a surprisingly short time.
- 5. It is very economical.
- 6. It is less messy and more fool-proof than other methods.

Best of all, many workers already have the necessary equipment for application in their homes—a vacuum cleaner? This supplies the air-pressure for spraying and



The sprayer as illustrated (left) is available as an accessory from vacuum cleaner dealers at a cost of \$1.50 to \$2.00. (Right) You can put a smooth even finish on your prints with lightning speed this easy way. Spraying liquid is made from a clear pyroxylin finish. See text for simple formula.

## Great Cameras

can come in any size. The measure of their greatness is not in their dimensions, but in the degree to which they

combine precision, thoughtfully engineered design, and optical excellence.

The Kodak Medalist II (below) is recognized as one of the great cameras. Its optical system, utilizing a Kodak Ektar f/3.5 Lens, is unexcelled in any camera taking a 2½ x 3½ picture. A coupled range finder and a hand-lapped helical focusing mount assure the utmost accuracy and smoothness in focusing. A nine-speed, 1/400 Kodak Flash Supermatic Shutter adapts it to every picture situation. It uses 620 roll film and—with a ground-glass accessory back—can be adapted to sheet film, film packs, or plates—color or black-and-white.

Now comes a new miniature, the Kodak Signet 35 Camera (facing page). Users are already speaking of it as the camera which puts an "extra something," a plus quality, into 35mm picture making. It, too, has a Kodak Ektar f/3.5 Lens in a helical focusing mount with precision coupled range finder. The shutter is a fast-opening, synchronized Kodak Synchro 300 Shutter with speeds from 1/25 to 1/300.

Prices: Kodak Medalist II Camera, with leather field case, neck strap, Adapter Ring Insert, Lens Cap, and TBI Cable Release No. 2, \$312.50. Kodak Signet 35 Camera, with neck strap, \$95. Prices include Federal Tax.





the "spray-gun" can be bought for \$1.50 to \$2.00. The only other thing you will need is the "Finishing Fluid." This you can prepare yourself in a few minutes.

The ideal vacuum cleaner for this purpose is the tank type, as the necessary equipment and attachments are usually sold together as an outfit. (I use a Hoover Tank model and it works perfectly.) The conventional cleaner with handle and bag will probably work if it produces sufficient air pressure. In that case the hose that comes with the attachments is connected to the blower outlet in place of the dust bag. The other end of the hose is attached to the glass sprayer jar. This jar is obtained complete with screw-cap that embodies the sprayer and hose coupling. It looks very much like a pint Mason canning jar, and can be purchased as an accessory from the vacuum cleaner dealer at a cost of \$1.50 to \$2.00, complete with sprayer and coupling.

If you already have the tank type of cleaner, it is only a matter of inserting the hose into the blower end. In either case, be sure to turn on and run the cleaner for a while before attaching the sprayer and let the excess dust blow out. At the same time shake the hose to dislodge all dirt. Be sure it is absolutely clean before

you start.

### The Spraying Liquid

The spraying liquid is made from a clear pyroxylin finish used for coating linoleums. It is water-white and does not show discoloration on prints, either toned or black and white. There are a number of brands available and it is usually referred to as a plastic-type or lacquertype finish. I have used Duco Clear Linoleum Lacquer with excellent results. Another brand is Glaxo. A pint will last a long time and the cost is slightly over \$1.00. Paint stores, linoleum dealers and housewares departments would be the logical place to look for it. The finish as it comes must be diluted with lacquer thinner which can be obtained at paint stores. The amount of gloss desired on a print is controlled to some degree by dilution. However, a light coating tends to give a softer, more matte effect. A five- or six-to-one dilution is about right for average work. You can measure two ounces of the lacquer finish and add ten ounces of lacquer thinner to give a five-to-one dilution. This can be stored in a bottle for use as needed. Less dilution gives more gloss and more dilution gives less gloss.

Prints to be treated should be completely spotted and mounted and must be free from wax. A mediobromed print can be used if the pigment is allowed to dry for

three or four days before spraying.

Stand the print upright against a wall or support. Hang some newspaper or wrapping paper behind the print and if a table is used, cover the table with paper to protect it from spray. Spray the print, mount and all with a continuous motion—side to side, or top to bottom. A little practice on an old print will soon give you the idea. Avoid directing the spray onto one spot long enough to form a pool that will run down the surface.

The sprayer jar should be about one-third full of liquid for best results. When everything is ready and the cleaner is turned on, the sprayer is not activated until the button on top of the lid is pressed down. This control button is on a spring tension and when the pressure is released, the spraying stops even though the air pressure is still going. Another advantage is the screw tension on the control button. It can be adjusted by turning the knob or button clockwise for finer spray, and counter-clockwise for more liquid or coarser spray.

It is best to start with the button screwed down (shut) and open it gradually until a very fine mist-like spray begins to show. Stand about three feet away from the print and move up a bit closer when the spray starts. This will avoid blotchy patches and before long you will be able to spray a print with speed and ease. Be sure to keep the spray in motion with a circular or sweeping action, which ever comes easiest for you. Use a slanting light against the print so you can follow the progress of coating. Don't spray too heavily as the finish will run. A few trials will give you complete confidence. Empty any spraying liquid left into a bottle for future use. Clean the sprayer jar and parts with a little lacquer thinner and wipe dry.

As soon as a print is coated, lay it down flat. After ten or fifteen minutes the finish will set so that the prints can be spread out in any position for complete hardening.

To workers who use pigment spotting or mediobrome, it might be said that some precaution is usually necessary with some types of printing papers to avoid stains and discoloration. A light pre-spraying of the lacquer finish will seal the surface of the paper and provide a protection against discoloring. Stains and grease spots from oil pigments sometimes do not show up for months after the print is made. Workers in this medium will be interested to know that a pre-sprayed surface also provides a fine base on which to work. The processed print should be allowed to dry for several days before final spray-finishing.

After the coating has thoroughly dried (about 24 hours) the print may be waxed. It is advisable to use a wax that is almost colorless like Duco No. 7. The wax may be applied with a wad of cloth and after a few minutes buffed or polished with a flannel pad or lamb's wool mit. Avoid getting any wax on the mount. Two applications of wax will provide an excellent protection

when prints are to be sent out for exhibition. In conclusion, may I suggest that you start with a fiveto-one dilution. The finish dries so quickly you can then determine if you have the right amount of sheen. Then modify the dilution accordingly. The luster of a print's surface, which contributes to its appeal, should be artistic and in keeping with the picture. If you use several kinds of printing papers, you will learn that some types will require more coating than others. Avoid piling the finish on so heavily as to attract undue attention. The more subtle effects are usually in better taste. A pleasing satiny sheen is easily attained and will have the approval of discriminating critics. See that the mount is clean before spraying as the finish will act as a seal and marks cannot be erased. It is a good plan to accumulate a number of prints for spraying at one time.

If you are a meticulous exhibitor and after trial you adopt this method of finishing, you may want to invest in a separate hose. In this way you will always have a hose that is clean and ready to use and by so doing keep on the

good side of "the darkroom widow."

# psa Journal

Devoted to News and Notes of the Photographic Society of America



## PART 2

Vol. 17 No. 9

### OFFICIAL NOTICE

The Semi-annual (sixth) Meeting for the 1950-51 term of the Board of Directors of the Photographic Society of America was called to order by the President at 10 Am at PSA Headquarters, Board of Directors Room, Philadelphia, Pennsylvania, May 3, 1951.

The following were present: D. Eisendrath, W. Hammond, N. Harkness, C. Heller, G. W. Johnson, H. J. Johnson, J. Magee, J. Mulder, presiding, C. Ruchhoft, W. Swann, Miss Doris Weber, and J. Whiting; John R. Hogan represented the Pictorial Division at Mr. Chase's request.

The following were present upon invitation of the President: W. H. Savary (nominee for director in the 1951-53 term), F. Quellmalz, Jr., Editor of PSA JOURNAL (to present the JOURNAL Budget), R. R. Koch acted as Secretary for the meeting, V. McDonnell (to present Hotel New Yorker's invitation to hold the 1952 Convention there).

The minutes were accepted for the meeting held in Rochester on March 3, and the Financial Statements for January, February, March, and April 1951 were approved.

Mr. Heller presented a budget (see end of this report) predicated on a forecast of number of paying members. It was agreed to accept the budget as presented, with the provision that it be reviewed at the 1951 Annual Meeting. The Finance Committee was given authority to increase the bonds of the treasurer and the office manager. Canadian Membership fees were set at \$10 in U. S. currency.

Mr. H. J. Johnson reported he has shelved the PSA Field Trip idea due to lack of interest by clubs. A return postal card was mailed to each affiliated camera club to measure club response to the proposal that special services be available to clubs with 100% PSA membership. Replies showed that most of the clubs did not agree that a distinction could or should be made. Accordingly, the idea is being dropped. Mr. Johnson reported that clubs are interested in a small print program and that he turned over all inquiries to the Pictorial Division.

Mr. Harkness suggested cooperation with military hospitals to aid handicapped veterans in pursuit of photography. During discussion it was suggested that chapters could handle a project of this nature. The President requested Mr. Harkness to send available material on this service to Mr. H. J. Johnson for him to place the matter before clubs and get opinions.

Mr. Vincent McDonnell, Assistant Man-

ager-Sales, of the New Yorker Hotel invited the Society to use that hotel as its headquarters for the 1952 convention. He assured the Society of fair treatment. All activities would be combined under one roof, making it unnecessary to leave the hotel for any programs, including the exhibition. The hotel would furnish without cost, space for all meetings and suitable display racks for handling the exhibition. Banquet facilities can accommodate 700.

The Convention Committee recom mended unanimously that the New York invitation be accepted. Mr. Eisendrath said many New York members feel that prices are too high in New York City for a pleasurable convention. Mr. Whiting said that a New York Convention should enlist the cooperation of the various trade magazines and other photographic organizations located in the metropolitan district in order that a broad convention be offered. It was decided to accept the Metropolitan Camera Club Council's invitation for the 1952 convention in New York City with the provision that other New York groups interested in creative photography be invited to participate and that acceptance be conditional upon availability of adequate exhibition space for that type of convention

After an inspection tour of Headquarters, the members expressed to Mr. Heller their satisfaction for the manner in which remodeling and redecorating were handled.

Mr. Harkness, reporting on the assignment given him at the March meeting, said that the press release stencil file at Headquarters is being revised to make it current. Releases will be forwarded to all trade magazines and newspapers sponsoring photography. Divisions will need to furnish press release items. He has negotiated with Popular Photography, Modern Photography, and U. S. Camers for free advertising for promotion of PSA.

Mr. Koch advised that Headquarters has addressed entry forms for several salons and users report excellent response.

Mr. Quellmalz presented the budget for PSA JOURNAL. The Board accepted the budget with the provision that it be reviewed at the 1951 Annual Meeting. Mr. Quellmalz stated that the Publications Committee plans to print the JOURNAL in two parts commencing with the July issue. Part One will be exclusively a photographic magazine and will contain advertising. Part Two will be separate and will be a "News Bulletin" printed on a cheaper grade of

### PSA CONVENTION HIGHLIGHTS

Captions and cutting bother you with your movies? Attend the 1951 PSA CON-VENTION in Detroit. paper. The committee feels that advertising will support the 16 additional pages thus available in Part One. These plans were approved. Since lateness of receipt of the JOUENAL has caused many complaints, the committee is planning to advance the mailing five days each month until the JOUENAL is on a current basis. This received hearty endorsement.

Mr. Eisendrath announced that PJD is considering awarding a plaque to the "Photo-Journalist of the Year" to stimulate interest in PJD. The award will be open to non-members.

Mr. Ruchhoft reported cooperation with the Detroit exhibition committee. Each division has been contacted in connection with the 1951 Exhibition.

The Board took special note of the donation of lighting equipment and a floor polisher by Mr. Cass. The President was instructed to thank Mr. Cass for his generous donation.

A charter was granted to the Chattanooga Chapter to expire at the 1951 Annual Meeting.

The following resolution was adopted unanimously as presented by Dr. E. P. Wightman by letter:

Be it resolved that: The Photographic Society of America accepts with deep appreciation and heartfelt thanks, the greserous and very valuable and useful gift to the Society from Mrs. Joseph M. Bing of the books, pamphiets, periodicals, and other items from the library of far late husband, whose death recently is a very great loss to the Society, his many sincere friends, and the photographic world in general.

The next meeting was set for Detroit on June 16.

The meeting was declared closed at 4:45 PM.

JOHN G. MULDER, President

### PSA Budget - 1951-52

1 on Dunger - 1	771-76
Hendquarters	\$25,000
Journal	25,000
Camera Club Committee	300
Membership	2,500
Elections	400
Honors	300
Library	200
National Lecture	100
Nominating	50
Permanent Print	50
Public Relations	50
President's Office	1,000
Reserve	2,050
	Ministrania .
Total	\$57,000
Division Budget	
Color \$1,600	
Muthon Ficture 357	
N	

87 067

Total

PSA JOURNAL, Part 2, Sept. 1951

### NEWS AND NOTES

### Ralph Gray on Tour

PSA's prize-winning amateur movie maker, Ralph E. Gray, FPSA, who has been spending the summer in Yellowstone Park and vicinity, is scheduled to present his world-famous movies in several midwestern cities before beading for the PSA Convention in Detroit in October.

He will appear in Minneapolis right after Labor Day and in Milwaukee on September 12th and in Chicago on September 19th. On September 24th he will lecture before the Greater Detroit Camera Club Council. After the PSA Convention, he has speaking engagements in Cleveland and Pittsburgh. He will then head east for a visit to New York and Washington.

#### Edom Publishes Manual

Cliff Edom, APSA, former chairman of the PSA Photo-Journalism Division and professor of photo-journalism at the University of Missouri, has published a manual on how to make halftone and line engravings with a photo-enlarger. It is an illustrated 32-page, paper-bound booklet, which will be valuable to all in the graphic arts field. Copies may be obtained direct from Mr. Edom at 117 Stewart Road, Columbia, Mo., price \$3.50.

### PSA Convention Invitation

Highlight of the 250th birthday of the City of Detroit on July 24 was the dedication of the Detroit Historical Museum in the heart of the cultural center of the city.

Advantageously placed in the vicinity of the Institute of Arts and the Public Library and adjacent to the campus of Wayne University, its 48,000 square feet of exhibit space will be used to tell the story of Detroit. Its interpretative program is unique for as an urban museum it will trace the development of the municipal services which the citizens of Detroit enjoy.

Pictorial possibilities are many the Room of Tradition, the period alcoves, the Hall of Patriotism will provide opportunity for the camera enthusiast.

A challenge for the photographer will be the cobblestone street of 1870 which will be bordered by an old fire house in which there will be a horse-drawn engine, a women's shop, a toy shop, a boot and shoe store, a jewelry store, and a barber shop and tobacconist.

An exhibit of modern photography by a local camera club highlighting Detroit landmarks past and present, was hung as a feature of the opening weeks of the Museum

The Detroit Historical Society, which founded the Detroit Historical Museum, will maintain offices in the Museum building, and extends a welcome to you to visit the Museum on Sunday, October 14, 1951 from 1 to 5 PM in connection with the PSA Convention.

ANNA BELLE LEE J. BOYER Executive Secretary

### Brackett Clark Hall Obened

Brackett Clark Hall, a new addition to the George Eastman House of Photography, Rochester, N. Y., was formally opened on June 28th.

The hall is designed to show the manufacture of photographic materials and equipment, old and new. Each exhibit demonstrates a phase in the development of these manufacturing processes, from the first crude devices to the intricate and precise products made today.

Among the many items of historical interest are actual machines set up in the hall by millwrights. There is a "dope' mixing barrel used in 1891 for making film base, and a roll-film spooling device of 1895, with the original stool and table for the operator. A coating hopper, which was part of the apparatus used for the earliest method of making transparent roll-film when it was first introduced can be seen, and there is a dry plate sensitizing machine that was in use in 1904. Also on display is an old paper-sensitizing contrivance for applying emulsion to raw paper stock, and an emulsion press for shredding gelatin.

For the modern exhibits leading manu facturers of photographic materials and equipment have contributed displays showing the component parts of cameras, shutters, lemes and projectors. These are arranged in an "exploded" fashion, or cut cross section, so the visitor can see the complex and delicate hidden mechanism of fine photographic apparatus of today, and realize in some degree the problems of their manufacture.

Other displays, featuring samples and photographs, show the many steps required in making film and sensitized paper from raw materials.

Short motion picture films in push-button projectors which can be operated by visitors, show various manufacturing processe

Filling the center of the hall is a photographic mosaic of Rochester and its environs, 18 feet in diameter, supplied by the U. S. Air Force. On this mosaic the various factories where photographic materials are manufactured are marked, so the visitor can at once grasp that Rochester is truly the Photographic Center of the World.

According to Dr. C. E. K. Mees, Hon. FPSA, President of the George Eastman House, this is the only collection in the world which shows the history of the photographic manufacturing processes

Brackett Clark Hall has been given to George Eastman House by his son, George H. Clark, in memory of his father, who, along with Colonel Henry Strong, was one of the first supporters of the "Eastman Dry Plate and Film Company" and a director and secretary of the Eastman Kodak Company from its formation in 1892 until his death in 1900.

### PSA CONVENTION HIGHLIGHTS

Maurice Tabard-of Paris, France, speaks on "Creative Photography." Learn how to go beyond the factual restrictions of ordinary photography from Maurice Tabard who is one of the most potent influences in today's photographic world. Exciting! New! Mark your program for this Pictorial Division feature.

### Barbara Green to Play Return Engagement

Barbara Green, APSA, has just completed a tour for the National Lecture Program and the response has been so enthusiastic and the demand from clubs who were unable to schedule her last spring so great that the NLP is arranging another tour this fall.

She will begin the fall tour about the first of October and cover nearly all of the east-

ern half of the country.

Her talk entitled "New Prints For Old" was hailed wherever she went. The best tribute that can be given is a quotation from the Bulletin of the Youngstown Photographic Society: "The Barbara Green meeting was outstanding. Mrs. Green was all she was touted to be and more, and displayed a photographic knowledge equal to that of any man we ever listened to. But that's only the half of it, for she's as sweet and charming a girl as one might hope to meet. Our having her here proved to be a most delightful occasion. She's a worthy ambassador, though an unofficial one, of the PSA, and developed much additional good-will for that organization here."

Many clubs have already arranged to have her appear on their program this fall. Since only a limited number of engagements can be booked it would be advisable to

inquire immediately if your club would like to present Mrs. Green in October.

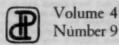
Barbara reports that on the spring tour she had a few occasions to spend a day or two with several of the clubs, and, in addition to presenting her talk at a formal meeting, she was delighted to get together with a few avid members and show them some of the intricacies of chalking on prints, retouching, etc.

Perhaps the outstanding feature of her talk is the demonstration she gives with her prints in which she shows that with one negative it was possible to make seven different and distinct prints, every one of which is salon calibre. Her prints bear out the training that she has had with such famous teachers as Adolf Fassbender, Hon.FPSA, and the late J. Ghislain Lootens. It was through the encouragement and guidance of Lootens that she first began giving talks to photographic groups and writing articles. She served as an Associate Editor of Comera Magazine for several years, and has had articles published in almost every photographic publication.

For complete information in securing an engagement of Barbara Green for your group, write to the Chairman of the National Lecture Program, Jack Clemmer, Box 548, West Richfield, Ohio.

### Pictorial DIGEST Division

Devoted to News of the Pictorial Division of the Photographic Society of America



### Canadian Members

OLIVER W. R. SMITH \*

For some time Canadian amateur photographers have worked toward admission to full membership in PSA which would make them eligible to participate in all the Society services on an equal footing with the U. S. members. Now their ambition has been realized and Canada has become a PSA District.

Having taken some small part in securing that status, the writer has been given the job of setting up the Pictorial Division's organization in Canada as an assistant to W. E. "Gene" Chase. While plans are still in the formative stages, our organization will parailel the Pictorial Division set-up so that Tape Recorded programs, Camera Club Print Circuits, and all other PD services, including All-Canadian Port-

folios, may be made available to member clubs and individuals.

The Canadian-American International portfolios will continue to operate and Inter-Continental Portfolios will be made available to those desiring to join them. It is interesting to record that one well known club, dormant for some time, was aided materially toward a resurgence of interest through the loaning and exhibiting of International Portfolio prints. It is planned to make similar assistance available to other clubs whenever requested.

I have indeed been fortunate in securing assistance from many well qualified Canadian photographers, and while the panel is still incomplete, the organization of Pictorial Division services in Canada has been placed in the competent hands of the following: Stanley C. Dakin, of Nanaima, B. C., is the Provincial Representative for British Columbia, assisted by James A. McVie, APSA, of Victoria and Dr. Joseph S. Bricker of Vancouver: Dr. Edward V.

Spackman, of Lethbridge, Al., is the Provincial Representative for Alberta; Dr. Leslie G. Saunders, of Saskatoon, Sask., serves as Provincial Representative for Saskatchewan; George A. Driscoll, of Quebec, P.Q., is Provincial Representative of Quebec, assisted by Raymond Caron, APSA, of Montreal, P.Q., and Paul Christian, of Quebec City, P.Q.; and John J. Lawson, of Toronto, Ont., and Edward G. Tozer, of Oshawa, Ont., are Co-Representatives for the Province of Ontario, assisted by Lionel J. Tidridge, of Windsor, Ont., Robert M. Cunningham, of Ottawa, Ont., and A. E. Adams, of London, Ont. In charge of the Recorded Lecture Program in Canada is Frank L. Pogue of Toronto, Ont.

Inquiries concerning any phase of the Pictorial Division activities in Canada will be welcomed by these members.

In securing the wider membership status, Canadians are indebted to many PSAers, among whom John Muder, APSA, W. E. "Gene" Chase, APSA, Jane Shaffer, APSA, William Hutchinson and Rennie Weber should be mentioned.

We hope this will be only the beginning of continually increasing cooperation between Canadian and United States members of PSA to produce a stronger Society.

\* Assistant to Chairman, P.D.

### PICTORIAL DIVISION

W. E. "Gene" Chase, APSA, Chairman 4164 Federer St., St. Louis 16, Missouri Ray Miess, APSA, Vice-Chairman 1800 North Farwell Ave., Milwaukee 2, Wis. Lewis T. Reed, APSA, Secretary-Treasurer 500 South Main Street, Mt. Prospect, Ill.

#### THE DIGEST

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INTERNATIONAL PORTFOLIOS

Jane J. Shaffer, APSA, Director

5466 Clemens St., St. Louis 12, Missouri

AMERICAN PORTFOLIOS Eldridge R. Christhilf, Hon.PSA, Director Suite 406, 800 Davis St., Evanston, III.

PORTRAIT PORTFOLIOS
Paul J. Wolfe, Director
124 East Jefferson St., Butler, Pennsylvania

INTERNATIONAL EXHIBITS
Dr. Glenn Adams, APSA, Director
9 East Third Street, Cincinnati 2, Ohio

AMERICAN EXHIBITS
Fred Fix, Jr., APSA, Director
5956 N. Sheridan Rd., Chicago 40, Illinois

PORTFOLIAN CLUBS
Sten T. Anderson, APSA, Director
3247 Q Street, Lincoln 3, Nebraska

CAMERA CLUB PRINT CIRCUITS William R. Hutchinson, Director Box 367, Newburgh, New York

INTERNATIONAL CLUB PRINT COMPETITION Robert J. Lauer, Director

8229 Rockway, Wauwatosa 13, Wisconsin PSA JOURNAL, Part 2, Sept. 1951 CAMERA CLUB JUDGING SERVICE Henry E. McKay, Director 102 Beverley Road, White Plains, N. Y.

PERSONALIZED PRINT ANALYSIS
J. Elwood Armstrong, APSA, Director
17402 Monica, Detroit 21, Michigan

PORTFOLIO OF PORTFOLIOS Dennis R. Anderson, Director 1219 Race Street, New Castle, Indiana

SALON PRACTICES
Ralph L. Mahon, APSA, Director
260 Forest Avenue, Elmhurst, Illinois

RECORDED LECTURES
Philip H. Maples, Director
29 Spring Street, Brockport, New York

PEN PALS

Major E. J. Hobbs, Director

1673 Union Commerce Bldg., Cleveland, O.

AWARD OF MERIT
Warren W. Lewis, Director
2055 No. Sedgwick St., Chicago 14, Iil.

ART
Doris Martha Weber, APSA, Director
2024 East 86th Street, Cleveland 6, Ohio

MEMBERSHIP
H. Jack Jones, Director
P. O. Box 220, Montgomery 1, Alabama

ORGANIZATION

John R. Hogan, Hon.PSA, FPSA, Director
1528 Walnut Street, Philadelphia 2, Penna.



MISS EVELYN M. ROBBINS, Associate Editor

Calling all portfolioists! Especially those who are located some distance from the

metropolitan areas, and even some distance

from camera club affiliations, competent lecturers and others who have enough knowledge of photography to help them.

Do you realize that each portfolio contains 14 members and a commentator, besides yourself, all eager and willing to help you? Just a word will bring all the help you want from each and everyone of

them, and on whatever subject you need.
Why don't you invite your friends in when you receive a portfolio and show them how they work? They will benefit, too. It would be a wonderful way to increase portfolio, Pictorial Division and PSA memberships—as well as being an unbeatable way to get a group together that are mutually interested in photography. You can't beat a group such as this as

a start for a camera club in your town. It is the finest kind of foundation any club could wish for.

Have you stopped to think how much more belpful it would be to you and to others of your acquaintance if you can sell them on the portfolio idea? With more than one portfolio coming into your locality, and all of them shared, the helpfulness is multiplied one-hundred-fold. It comes around so much oftener that you should at no time be without contact with others who can and will help and advise you.

This isn't a new idea by any means. It is the aim and purpose of the portfolio activity. It is designed for you.

This is no dream, it is an actuality. I have a friend who is located miles away from everything. He told me just the other day to bring this message to you, because it has been such a wonderful help to him. I've watched his photographic technique grow, since he has been a portfolio member, and the strides he has made under their help and guidance is almost unbelievable. When he started, his prints looked, even as yours and mine, very much the poorest quality of snapshooter type. Now he is doing work that is of the finest quality and he is ready to make a try at the salons. I'll just make you a little bet that by the time this goes to press he will "copped" one of those Portfolio have Medals!

### **Detroit Convention**

Remember, just one month from now, (October 10-13, to be exact) is the time of the PSA Convention in Detroit. They are laying big plans for us. There is even going to be a fine big room devoted just to the PSA portfolio activity.

Come, meet your friends there. Believe me, there is nothing quite like the thrill you get when you meet for the first time your fellow portfolio members whom you have known previously only through correspondence.

It's "Detroit for Fun in '51"! Will I see you there?

### Random Thoughts ELDRIDGE R. CHRISTHILF, Hon.PSA

The portfolios supply no magic formula for a short cut to pictorialism and to salon records. They do, however, belp along the way, provided you will go into the activity seriously and will apply what you learn from the comments of your fellow members and of your circle commentator. You can be helped if you are willing to do your part in achieving that goal which you are seeking. This is a cooperative activity in which all must help each other. If you do that you will gain much from your portfolio membership and will steadily improve in your photographic endeavors.

These thoughts have been prompted by two wholly unsolicited letters which reached me this week. One was from Arlington, N. J., and carried with it a renewal of a portfolio membership for a five-year period. In the letter accompanying the renewal was written:

May I tell you how much I have enjoyed the ortfolios? I also think that my work has improved under the criticism of this particular group.

### AN INVITATION

This is an invitation to every PSA member to participate in the PSA American Portfolios.

Enrollments are now being received in the following specialized

PSA Pictorial Portfolios PSA Portrait Portfolim PSA Miniature Portfoli

PSA Control Process Portfolios
PSA Star Exhibitor Portfolios
(For PSA Award of Merit Winners) PSA Nature Portfolios PSA Photo-Journalism Portfolion

For information concerning any of the foregoing activities and for enrollment blanks, write to the Director of the PSA American Portfolios, Eldridge R. Christhilf, Hon. PSA,

APSA, Suite 406, 800 Davis Street, Evanston, Illinois.

Certainly the comments have been more favorable on my recent work than they were on my earlier solutions. I am not a professional photographer but simply an amateur who desires to do better work, and who has not always sees the faults in the work that he has been doing. I am grateful that this portfolio business came to my attention

The other letter came from Jersey City, N. J., and read, in part:

Sincerely, I think the portfolios are the greatest means available to the average photographer to improve his work and expand his knowledge of his art and of his fellow workers. I, myself, can't get enough of them even though I am pretty well

tied up with local camera club circles.

I am behind the PSA and particularly the Picorial Division in all their aims, and anything that I can do to help attain them would be record enough for the small effort on my part.

This member after several years in the PSA Pictorial Portfolios has now received his PSA Award of Merit and, in addition to the Pictorial Portfolios of which he is a member, has joined several of the PSA Star Exhibitor Portfolios. Not satisfied with that he has volunteered as circle secretary of one of the PSA Star Exhibitor Portfolio circles. What PSA, the Pictorial Division and the portfolios mean to these two members they can also mean to any other serious member of PSA who realizes that one must give in order to receive. If you will give of yourself seriously in carrying out the details of your partfolio membership you will gain greatly thereby.

The portfolios are beginning their seventh year. In that period I have seen many go from mere novices to salon exhibitors and they have been profuse in their praise of the help that the portfolios have given them along the road to better photography.

### Wanted - Prints

From time to time we have sent out an SOS in the JOURNAL to those members who join up for the portfolios and then fail to send in their initial print. These prints are needed before they can become active in the portfolios, before they can be assigned to a portfolio circle. If you are one of those who have put off sending in your print will you kindly get that print under way now. It is badly needed. If by chance you have mislaid the technical data folder to accompany your print merely send a post card to portfolio headquarters and a new folder will be sent you by return mail.

Don't do as a scattered few have done. blast PSA for lack of action on the part of the portfolios, when they themselves have not furnished us with the print which would enable them to become active and to enjoy the benefits that the portfolios are waiting to bring them. At the present time there is no long delay between the receiving of your print until you are assigned to a circle. In fact quite a few prints have been assigned to a circle within 24 hours after receipt. So, once again, we make the appeal-if you have joined the portfolios get that print of yours in now-it is badly needed.

#### A Salute

Earlier we mentioned that the portfolios were now starting on their seventh year. It is only fitting, therefore, that we give a salute to those members who joined in the first month of the life of the portfolios and who are still active in their portfolio membership. So, to these portfolio pioneers we say "thanks for your loyalty and here is hoping that you will remain in the portfolios for many years to come." Among these pioneers are:

L. R. Wilkinson, Galesburg, Illinois Roy Hirshburg, APSA, Richmond, Indiana Ivan D. Smith, Wayland, Michigan Louis Puggard, Detroit, Michigan Leonard Schaden, Grand Haven, Michigan Clarence Einham, Quincy, Illinois Clarence Einhaus, Quincy, Illinois Waiter Dougherty, Lansing, Michigan Barney DeVietti, Price, Utah Lee Jenkins, Columbia, Missouri Floyd G. Piper, Streater, Illinois Harold Carpenter, Sandy, Utah Mir H. Simmons, Susanville, California Dr. Ernest Seydeli, Wichita, Kansse Reth Conseller, Tesha Ohlabonson. Dr. Ernest Seydell, Wichita, Kansas Ruth Canaday, Tulia, Oklahoma James B. Nevitt, Bellaire, Texas H. O. Serkland, St. James, Minnesota Wallace Radston, Dallas, Texas Dr. H. E. Morgan, Newton, Kansas Moreland Herring, Waxahachie, Texas Alice Cary Sjoberg, Lakeland, Colorado Ray J. Loomis, Casper, Wyoming E. V. Wilcox, Scotland, South Dakota C. Elion Herlund Luckow, Michigan E. V. Wilcox, Scotland, South Dances.
C. Elton Heglund, Jackson, Michigan
G. L. Weissenberger, Keokuk, Iowa
Wallis Nelson, Borger, Texas. wants Nemon, Borger, FELBA Edith M. Royky, Sloux City, Iowa Ray Miem, APSA, Milwaukee, Wiscom R. D. Bige, North Flatte, Nebraska Clyde Baumgardner, Hanard, Kentucky Everett W. Saggua, Elberton, Georgia Robert S. Anderson, Memphis, Tennes L. Tyler, Felfas. Robert S. Anderson, Memphis, Tennessee J. L. Tyler, Fairfax, S. C.

### Comments by a Commentator

HUGH N. MONTGOMERY, Commentator, Folio # 32

The editor asked for comments by a commentator, so we say, "Okay"; and then get the back issues of PSA JOURNAL to see what the other commentators have said before. Sure enough, what you had in mind has already been said! So, we'll just comment on the impressions we get as commentator of just one of the many circles.

The original intent of the Pictorial Port-

folios was to offer constructive help to PSA members who were more or less isolated from camera clubs, lecturers, and gatherings where social as well as photographic contacts are made. This was fine! However. it has turned out that a lot of the better (and best) workers joined up, and we find several of them in a circle. It is my opinion that in circles of this type, where we find several members even better qualified to comment than the assigned commentators (like circle # 32), that they could very well dispense with the commentator. The comments of the better workers are all one would want or need. Much time could be saved, and the portfolio would move around more often.

Let's take those members who need help and haven't progressed very far. We invariably find that their prints are woefully lacking in subject matter. It is a little hard to tell them their print is valueless, no matter what technical procedure could be resorted to; but nevertheless, we suggest various methods of making a better print, and that way let them down as easily as possible. What we would really like to say, is: "What did you ever make it for in the first place?" But it just wouldn't do, because a statement like that is one sure way to get rid of a camera club member; and no doubt applies also to portfolioistsa portfolio group being a sort of a camera club in itself.

But there is a bright side to everything; and, after a few rounds, the members begin to put in pictures that mean something. Then, they give you something to talk about. At this stage we notice their prints are technically good, but lacking in those fine points that only manipulation can achieve. Simple dodging they learn quickly, but the elimination of unrelated objects, emphasis and cohesion are indicated. When the worker reaches this stage, it is a real pleasure to offer suggestions on practical methods of print control. This we do, and occasionally we find they heed the advice and soon become exhibitors.

To get back to those members who are already advanced, we go along with the rules and comment on their prints, knowing full well they will pay little attention to them-nor do they need it in the first place. It is noted, though, that these capable workers quite often put in mediocre prints, some of which are hardly worthy of comment. We know from their work and salon records that they are quite capable and often wonder just what their thoughts are. Possibly they figure most anything will do for a portfolio, but I don't think this is fair. It doesn't help the beginnerunless to demonstrate to them that even the top workers can, with the least of effort, turn out bum photographs. Even at that, these members do serve a useful purpose as part of a portfolio; and as stated above, I think their comments on the others prints are sufficient for the folio as a whole. They get fun out of it, too, so why waste time with a commentator?

After several years' experience as a member (Pictorial # 3) and as a commentator. I am convinced that one of the finest activities of the Society is the portfolios. While we are on the subject let's not forget to give a pat on the back to the man who is responsible for the whole thing, Eldridge R. Christhilf, Hon.PSA.

### DETROIT FOR FUN IN '51

HIGHLIGHTS FROM

### Portrait Portfolios

PAUL J. WOLFE, Associate Editor

Allan L. Horvath, commentator for No. 1, offers this advice to the chap just getting his teeth into a bit of portraiture: "Try taking pictures first with a single light source and working for a maximum quality with this simple lighting in conjunction with some good standard poses. Use one film, developer and paper. Avoid unusual and complicated lighting until you have mastered the quality and variety of effects obtainable with one light. A worthwhile book on portraiture will help a lot. Fred Archer's book on portrait lighting (obtainable from PSA JOURNAL) is one that I recommend."

Allan continues: "Keep a record of all the pertinent data in connection with your experiments. When you can obtain negatives with a delicate but complete range of tones which will produce a print of almost comparable quality and flesh tones as some of the better portraits in this folio, you will be ready to try more involved technique. Unless you lay a solid foundation in photo fundamentals you will never be able to achieve any consistent results no matter if you learn many tricks of the trade which may produce an occasional good portrait."

Morris Germain, commentator for No. 5, has inserted in the portfolio for his group a manual of Basic Portrait Lighting with the note that each member may avail themselves of a copy gratis. This is a wonderful gesture on the part of Mr. Germain and his entire group will profit. It is possible that he may send out copies to others if they write, and if you do why not offer a token of payment since it is reasonably certain Mr. Germain cannot put out this twelve page lesson without much cost. Write Morris Germain, School of Photography, 225 Broadway, New York 7, N. V.

Congratulations to Portrait Portfolio members: Mrs. Madeline Jantzen of Earlville, N. V., for winning the May Picture of the Month in the Utica Camera Club. To Susan Sherman for her picture "Seth" appearing in American Photography. To Frederic Calvert for making several salons in the past few months. To Gene Rhamy, secretary for color portfolio No. 14, who reports a complete circuit of his portfolio in less than scheduled time. Hats off to all of them.

From the notebook of No. 13 we quote Bernard M. Acosta, its -commentator: "Whatever your aims in portraiture remember that each key requires its own technique in lighting. If you want to make a low key portrait you work in the low scale of tones and with a low key subject; in the middle key you extend your scale of tones and this is the easiest photography to deal with; in the high key you work with the highest scale of tones and a high key subject. Just as a low key needs highlights for accent the high key needs accent the opposite way. The mouth, the eyes or any

dark accent that you might be able to stress should be done in high key."

Commentators are unanimous in this request: Enclose complete data with your picture. By so doing you simplify the job of the commentator.

Don't forget that all members of Portrait Portfolios receive without charge our excellent publication, "Portrait Pointers," edited by Maurice H. Louis. Each edition is worth the one dollar service charge alone. Get into our portrait taking family. Write the director today.



A. LYNNE PASCHALL, Associate Editor

Whenever camera club members gather together, the conversation soon turns to one question: What can we have for a program? The answer is very simple, we must have pictures. Without them no camera club can long survive.

The ideal meeting is one that centers around the 15 or 20 new prints brought in by the members, but that is something for which we can only hope. If your club is like many another one we know, and the members are too busy, or are spending their evenings in front of television sets instead of in the darkroom, then something must be done. You must go out and get some prints for them to argue about. The pages of the Pictorial Digest are full of suggestions.

#### American Exhibits

We recommend that you engage at least one of the American Exhibits for the coming season. Write Fred Fix, who is the director of this activity, and get the latest list of shows available. His address is on the first page of the Digest.

### Camera Club Print Circuits

By all means, join a Camera Club Print Circuit. Beginners as well as experts always eajoy them, and all a club needs to get started on a circuit is three prints. If new prints are not coming in yet, use the three best ones from last year. Write William Hutchinson for an application blank

### Portfolian Clubs

The writer was fortunate enough to be present at a meeting of the new Miami Valley Portfolian Club. As sometimes happens, fortune favored the group and Pictorial Portfolio No. 48 arrived just in time for the club's regular meeting. In addition to this, some beautiful 16" x 20" prints of salon quality were brought in. Mr. Herbert M. Howison, of Berea, Ohio, has been appointed sponsor for this club.

The Portfolian Club provides a method whereby a member of the group may have the advantage of viewing and evaluating the portfolios of the other members of the group, at no additional cost. It features "round table" discussion and comparison of ideas along photographic lines.

The Portfolian Club assembles whenever a member's portfolio arrives and all participate in the evaluation of the prints. Thus each member gets the benefit of all the data and comments of all the portfolios represented by the group.

Why not look into this and secure for yourself the advantage of cooperative effort leading to a better appreciation of what pertains to technique and the know-how of good and satisfying photography. Organize such a group in your city or community ant reap these benefits. For further infor-mation and application blanks, contact Sten T. Anderson, APSA, Director,

### Recorded Programs

For the past year, tape recordings have been obtainable from PSA. They were introduced at the 1950 Convention in a most dramatic fashion. We went into one of the auditoriums of the Lord Baltimore Hotel to hear P. H. Oelman's talk on "Photography of the Nude." Mr. Oelman was there but he sat with the audience and never said a word. The lecture was delivered from a tape recording and it was so well done that many people, coming into the darkened room a little late, recognized the speaker's voice and were unaware that a recording was being played.

Recordings now make it possible for clubs and councils of moderate size to hear talks by national celebrities, a privilege heretofore enjoyed only by the larger and richer organizations.

The total cost for a program need not exceed ten dollars. To guarantee against loss of slides, a deposit of twenty-five dollars is required, but the unused portion will be refunded. Checks should be made payable to the Photographic Society of America.

Each set consists of the tape recording and the slides to accompany it. The slides, unless otherwise stated, are in black and white and of the familiar 2" x 2" size. The outfit may be shipped by parcel post, insured for \$100.00.

The club must provide a slide projector and a tape player. The former presents no problem at all; every club has members that own their own projectors, and a tape machine can usually be found in any town that has a camera or record shop. Better check on this before ordering a program. The tape is of the standard "home recording" type made to play back at a speed of 334" per second. Programs are shipped to clubs early enough to allow time for a rehearsal playing, so that the slide and tape operators can practice together to insure a smooth-running program.

The list of recordings now available is given elsewhere. Write to Mr. P. B. Maples for booking instructions or further information.

### **PSA International Portfolios**

There are openings in the following PSA International Portfolios for Pictorial Division members who are interested in interchanging prints for comment and analysis with the leading photographers in foreign countries:

Anglo-American Canadian-American India-American Australasian-American Cuban American French American Swedish American outh African-American Brazilian-American elgian-American Chinese-American Dominican-American International Medical Portfolion Conta Rican-American Carribbean-American Mexican-American International Control Process Portfolio

For information, write to the Director of PSA International Portfolios, Miss Jane J. Shaffer, 5466 Clemens, St. Louis, Missouri.



GEORGE GREEN, Associate Editor

The best pictures-those world-beaters are always the ones we made in our mind. It's like the one that got away from the fisherman! But, humans being what they are, they want proof. They want to see with their own eyes what you claim to be true. Wherein lies the moral? Take them and make them and they'll talk for themselves while you stand by for the acclaim.

If you're fortunate enough to be one of those Detroit-bound PSAers in October, you're certain to have a grand time. The city is "reeking" with photographic possibilities. And you will have the opportunity to record the entire trip from home to Convention and back-in either black and white or color or perhaps both.

Before you start you should give yourself at least a few weeks of preparation. The most important being the checking of your camera and light meter to make certain that everything is ship-shape and in best working order. If you are planning to take along a new camera, shoot at least two rolls of film to "get the hang of it" and also to find out what its limitations are.

It's kind of difficult to find an appro priate darkroom while travelling so take along a changing bag if you can. If you can't, you can use a coat closet or whatever room is totally dark. If you're using color film which is packaged in a metal container don't reseal it with tape because you might cause a change in color balance due to locked-in air. Whatever you do, have fun at the PSA Detroit Convention.

### Personalized Print Analysis

Be sure to attend the Print Analysis Demonstration at the PSA Convention in Detroit on Thursday morning, October 11th. You will have the opportunity to meet and talk to some of the outstanding print makers in the country. It will also give you the chance to see how the unique print analysis plan is applied to prints selected for this purpose.

Many other features will highlight the star-studded Detroit program as the PSA reaches new heights in bringing forth speakers whose instructional value is well recognized. There will be Yousuf Karsh on portraits, Fred Bond on color, Maurice Tabard on creative photography, Johnny Appleseed Clinic, plus stereo, movies, photournalism, and others too numerous to list in this limited space.

Learn how the Photo Guild of Detroit makes the big blue glossies which have proven so successful in the salons! The PSA Salon will be opened on Wednesday, October 10th, and you will have an opportunity to view outstanding pictures from all over the world.

There will be buses to take you "South of the Border" to Canada for a barbecue and photographs along the Detroit River; a bus trip to Henry Ford's famous Greenfield Village with picture opportunities galore plus many other surprise features.

But let's get back to Personalized Print Analysis. Why don't you bring along some 8 x 10 prints for us to go over? Bring them to the Thursday morning meeting on October 11th. Our slogan is "Detroit for Fun in '51." I hope you can make it. But, just in case you can't, and you are a member of the P-D, send in your prints by following the few simple rules.

Prints should be 5 x 7 to 8 x 10, sent first class with return mailing label and first class postage included. On the back of each print should be the name and address of the maker, title of picture, all pertinent technical data and details. Also include a brief statement of the idea or purpose behind the picture, and the purpose for which it was taken (club contest, salons, etc.). In order that the analyist can do as good a job as possible, a contact print or small enlargement of the entire negative should be attached to the back of the print. Send prints to J. Elwood Armstrong, APSA,

#### Star Exhibitor Ratings

New Star Exhibitors and changes in rating of other Star Exhibitors since the last published listing are as follows:

New 1-Star Exhibitors

Raymond J. LeBlanc Hartford, Conn. Vernon N. Kisling Baltimore, Md. Advanced from 1-Star to 2-Star Joe E. Kennedy Tulsa, Okla. New York, N. Y. Willard H. Carr Advanced from 1-Star to 4-Star Jean Elwell, FPSA Detroit, Mich.

PSA JOURNAL, Part 2, Sept. 1951

Are you a Star Exhibitor? If you aren't, why don't you write to Warren W. Lewis, who will show you how easy it is to become one? Then you can wear a Star Exhibitor tab (in colors to represent the four degrees of the Award of Mertit) and everyone will know that "you've arrived." To Star Exhibitors who haven't sent for their tab, do so now! State your exhibitor's rank and enclose one dollar, or check made payable to the Photographic Society of America.

#### Lewis Honored

Warren W. Lewis, Director of the Award of Merit activity of the Pictorial Division, has been installed as President of the Chicago Area Camera Clubs Association for the 1951-1952 term. The Chicago Area Camera Clubs Association has a membership of more than 80 camera clubs in three states. Mr. Lewis stepped up as President after having served the Association as Vice-President for the past year, succeeding Loren M. Root who was President in 1950.

## VIEWS AND REVIEWS

BY THE EDITOR

Be selfish! Attend the Detroit Conven-

And-being selfish-you ask, what is there in it for me?

Without fear of being contradicted by anyone, I will answer that there is everything in a PSA Convention that the most selfish photographer would like to have. Evelyn Robbins has already told you about the beautiful large room which has been assigned to the portfolios. There will be samples of the various types of portfolios in which you can participate so you can see how they work and decide that this activity CAN be a lot of fun for you, too.

Or maybe you need a little help on a problem of technique. There will be the Johnny Appleseed clinic, the demonstration of print toning, and other helpful programs. And there will be top technicians from all over the world who will be glad to help with your individual problems.

Do you feel a bit unsure of yourself on composition? Attend the print clinic and the Personalized Print Analysis session. Do you just need a little inspiration to get you back in the groove of taking pictures again? Then listen to Yousuf Karsh, Maurice Tabard and the other notables who are such inspiring speakers.

Do you want to take pictures? There are several field trips planned to places in and near Detroit where picture material is abundant. So be sure to bring at least one

Do you have a gripe? Is there some service the Pictorial Division should have that they have overlooked? Can you make a suggestion toward a better handling of an existing service? If so, the Pictorial Division meeting is the place to get these things off your chest. You can and should participate in the PD—after all the officers

and directors are there to serve you. Help us to help you better.

Do you want photographic friends? There will be nearly a thousand interesting photographers from all over the world. And conventions are the best places in the world to make lasting friendships. In this group there will be many interested in the same things you are, who will help you with your problems and let you help them with theirs, who will share this fine hobby with you.

What more can you ask? Be selfish! Help yourself to the best. It's the 1951 PSA Convention. I'll see you there.

## On Your Way

On your way to the PSA Convention in Detroit, many of you will pass through or near Youngstown, Ohio. If you want an additional photographic pleasure, plan to stop in Youngstown Tuesday night, October 9, to hear Adolf Fassbender, Hon. FPSA, talk on "Seeing and Finding Pictures" at the Butler Art Institute in Youngstown at 8 PML. His talk is being sponsored by the Youngstown Photographic Society and will be illustrated with prints from his collection.

If you are unable to hear Mr. Fassbender, you may want to stop on your way to or from the Convention to see the display of 100 of his prints which are being shown at the Butler Art Institute the first three weeks in October.

STELLA JENES, Editor

#### **PSA Recorded Lecture Program**

The Recorded Lecture Program of the Pictorial Division offers the following programs for your club.

No. 1. An Analysis of Recognized Salon Prints by Ragnar Hedenvall, APSA

No. 2. Commentary on Recognized Salon Prints by Morris Gurrie No. 3. Outdoor Photography by D.

Ward Pease, FPSA
No. 4. Still Life by Ann Pilger
Dewey, APSA, Hon. PSA.

No. 5. New Prints for Old by Barbara Green, APSA SPECIAL Photography of the Nude

by P. H. Oelman, FPSA

A deposit of \$25.00 should accompany an order. A service charge is made for each Lecture. The SPE-CIAL costs \$10.00 and should be ordered directly from Mr. Oelman. The others cost \$6.50 for clubs which are members of both PSA and the Pictorial Division. Clubs which are members of PSA but not of the Pictorial Division will be charged \$7.50. Non PSA clubs and organizations are charged \$10.00.

For Nes. 1 to 5 order from: Philip B. Maples, 29 Spring Street, Brockport, New York.

For the SPECIAL please contact: P. H. Oelman, FPSA, 2505 Moorman Avenue, Cincinnati 6, Ohio.

#### Coming Salons Agreeing to Follow PSA Recommendations

NOTE: M—monochrome prints, C—cutor prints, T—cutor transparencies, SS—atereo slides, L—monochrome slides, A—architectural prints, S—scientific or nature prints. Entry fee is \$1.00 in each class unless otherwise specified. Recognition: The monochrome portions of iakinsi listed have Pictorial Division approval. Check nalon last of appropriate division for recognition of other usertions.

Cleveland (M,C,T) Closes Aug. 20. Exhibited Sept. 10-21 at galleries of Highes Company. Data: Mary Jane Matheson, 12317 McGowan Ave., Cleveland II, Ohio.

Puyollup (M,C) Closes Sept. 5. Exhibited Sept. 15-25 at Western Washington Feir. Data: Western Washington Fair Assn., Puyallup, Washington

PSA (M,C,T,S,MP) Closes Sept. 7. Exhibited Oct. 9-Nov. 4 at Detroit Institute of Arts. Data: Isadore A. Berger, 2200 National Bank Bldg., Detroit 26, Michigan.

Mysore (M) Closes Sept. 20. Exhibited during November. Data: K. Girimaji, 26 Sri Rams Mandir Road, Bangalore 4, India.

Chicago (M) Closes Sept. 29. Exhibited Oct. 20-Nov. 18 at Museum of Science and Industry. Data: Mrs. Loren M. Rost, 7007 Sheridan Rd., Chicago 26, Illinols.

Evensville (M) Closes Oct. 6. Exhibited Oct. 21-Nov. 3 at the Fine Arts Camera Club. Data: W. G. Hagstrom, 927 Judson Street, Evansville, Inf.

Victoria (M,T) Closes Oct. 13. Exhibited at Empress Hotel Nov. 11-18. Duta: Jas. A. Mc-Vie, 2171 Bartlett Ave., Victoris, B. C., Canada.

Miss. Valley (M,C,T) Closes Oct. 17. Exhibited Oct. 29-Nov. 10 at Stix, Baer & Fuller. Data: Alvin W. Prane, 4152 Botanical Ave., St. Louis 10, Mo.

Hong Kong (M) Closes Nov. 11. Exhibited Dec. 3-8. Data: Photographic Society of Hong Kong, c/o Kaan, Se-Leuk, Hang Shing Co. Ltd., 52 Bonham Strand East, Hong Kong, China.

Milwaukee (M.T.SS) Closes Nov. 24. Exhibited Dec. 6 to Jan. 7 at Layton School of Art. Data: R. J. Lauer, c/o Milwaukee Glove Co., 807 S. 14th St., Milwaukee 4, Wisconsin.

Havana (M.T) Closes Dec. 4. Exhibited at the club, Dec. 14-Jan. 11. Data: Club Fotografice de Cuba, O'Reilly 366, altes, per Compestela, Havana, Cuba.

#### Other Overseas Salons

Scottish (M,A,S,L,T) Closes Aug. 6 (for overseas entries). Exhibited Oct. 13-Nov. 3 at Museum Art Galleries. Data: W. D. Museo, Museum Art Galleries, Paisley, Refrewhire, Scotland.

dmsterdom (M,T) Closss Aug. 20. Exhibited Sept. 15-30 at Arti et Amicitiae Art Gallery. Data: Secretary, Focus Fotosalom of Amsterdam, Zuider Stationsweg 33, Bloemendaal, Holland.

Jonkoping (M) Chaon Aug. 25. Exhibited Sept. 22-30 at Old Town Hall. Data: Ingvar Sjoberg, 32 Barnarpagatan, Jonkoping, Sweden.

London (M,C) Closes Aug. 29 (Aug. 8 for oversess prints). Exhibited Sept. 15 to Oct. 13 at Galleries of the Royal Society. Data: Secretary, London Salon of Photography, 26 Conduit St., New Bend St., London WI, England.

Zagreb (M,C,News) Closes Sept. 1. Exhibited Oct. 28 to Nov. 18. Data: Foto Club Zagreb, P.O. Box 257, Zagreb, Jugoslavia.

Zuragoza (M) Closes Sept. 15. Exhibited during Oct. Data: Secretary, Sociedad Fotografica de Zuragoza, Plana de Sas, 7, Bajos, Zaragona, Soain.

Ghent (M) Closes Sept. 21. Exhibited Oct. 21 to Nov. 4. Data: Jan Vermeulen, 102 de Pintelaan, Ghent, Belgium.

Ahmedobed (M) Closes Nov. 10. Exhibited beginning Dec. 22. Data: U. S. Daial, Niharika, Pratima Studio, Lai Bhuvan, Relief Road, Ahmedobat, India.

Lucknew (M,C,T) Closes Dec. 13. Exhibited during Feb. and Mar. Data: S. H. H. Rasavi, 10 Cantonment Road, Lucknew, India.

## PSA COLOR DIVISION

GEORGE F. JOHNSON, APSA Forestry Building, State College, Penna.

The following letter has been received from the American Red Cross by Karl A. Baumgaertel, APSA, Supervisor of the PSA Color Division Hospital Slide project:

Our Volunteer Red Cross unit in Tokyo, Community Services to Hospitals, was so happy to receive the wooderful set of alides sent through you to the Circle of Cosfusion Camera Club here. We were even more thrilled when we were told that you hoped to be able to contribute about 400 stides each month through the Photographic Society of America to be used in our hospitals.

It is difficult for me to tell yon how much this contribution means to our hospitalized United Nations servicemen, but it has received a welcome suppassing almost every other denation handled through our volunteer Red Cross office. Mr. William Frice, who was President of the C of C Camera Club until his return to the States last month, also sent un a haut of slides so we are dividing those sent by each of you and mailing them to the American Red Cross in Korea as follows: the 3rd and 10th Station Heapitals, the 121st Evacuation Station Hospital, the 4th Fleid Hospital and the Swedish and Danish Hospital units. This will be our second shipment of slides to these hospitals. Thanks to the generosity of the Yassu Club, Tolkyo, we were able to include two electric hand viewers with extra bellis and batteries in cach package and will be able to send one more to each hospital in our next shipment too.

In many hospitals throughout the Far East Command, the recreational facilities are limited so there is no ceiling on the number of slides we can send to help brighten the long hours for their patients.

The thank-you letters sent to us from Korea after the first slides were received there were so enthusiastic that I would like to quote a few paragraphs from them, as I did in my letter to Mr. Price:

The ARC at the 3rd Station Hospital wrote: "We have many United Nations patients and it is difficult to ontertain such groups when language difficulties exist. The slides have been most help-ful—everyone certainly eaploys them! We use them primarily for bed patients who are unable to come to the Red Cross lounge for recreational activities. Thanks again for providing a touch of lovely color in this war torn country where aesthetic pastimes are indeed scarce."

aur indeed scarce."

From the 4th Field Hospital comes the newa that "the viewers and slides have been in constant uz. . . The slides have been clausified and filed by a patient committee. The patients sign the equipment out and we find it an unusual and popular activity."

popular activity."
"We want you to know that we really appreciate your gift" was the response from the 10th Station Hospital. "not only because of the time and expense involved, but because you were thinking of us. Any extra touch here that can be given to the men means a great deal. The viewers and slides are a real treat, especially since they have such a fine selection of pictures to look at."

If the members of the Photographic Society of

such a nine selection of pictures to took at."

If the members of the Photographic Society of America could know how much they have added to the morale of our fighting forces they would lead well recard for their thoughtful recently.

feel well repaid for their thoughtful generosity.

Please extend to them my own personal thanks in which I am joined by the servicemen and Red Crom staffs who have been the recipients of their kindness.

Mas. D. P. Armstrong Co-Chairman Community Services to Hospitals

Cessation of hostilities which is being discussed as this is written will not end the need for siddes as there will be many patients in the Army, Navy and Veterans Hospitals for years to come. What is especially needed are slides carrying a simple identification such as "New York City," "Grand Canyon," "Florida," or as the case may be. They need not be exhibition quality slides, any slide that can be projected or viewed will do. Pictures of city or country life, pictures

of flowers or animals are also desirable. Identification of the subject makes the slides much more valuable.

In addition to the above we are distributing about 2,000 sidies a month to Army, Navy and Veterans Hospitals in this country, not only for entertainment purposes but also for therapeutic work. Sides are donated to the hospitals, none are returned. Send slides to Karl A. Baumgaertel, APSA, 333 31st Avenue, San Francisco 21, California.

#### New Assignments

Two re-assignments of activities in the Color Division have been made. The Color Print Competition, formerly handled by Paul J. Wolf, APSA, of Hawthorne, New York, will be handled in the future by Warren S. Savary, R. D. #2, Box 221, Plainfield, New Jersey.

The Color Print Set (for individuals) and the Color Print Circuits, formerly handled by H. G. Mitchell and W. K. Raxworthy of Chicago, have been assigned to Harrison S. Sayre, 902 Dreams Landing, Annapolis, Maryland.

Paul J. Wolf, reporting on the 1950-51 color print competition states: "Three contests were beld, one by El Camino Color Pictorialists of Los Angeles, the second by Natural Color Camera Club of Pittsburgh, and the third by Pictorial Photographers of America in New York City. This year there were fewer entries than last year, but the overall quality of the prints submitted was very noticeably higher." For information on the 1951-52 competitions, write Mr. Savary.

The Color Print Sets for individual viewing comprises a collection of 20 color prints representing various color processes. These were viewed by 32 participants in 19 states and by many viewers in the Hawaiian Islands. In these Color Print Circuits, there have been about 12 participating in each of them to date. For information on the color print sets and circuits, write to the new director, Mr. Sayre.

#### First Two Awards

The first two color division medals to be awarded have been announced by Blanche Kolarik, APSA, :hairman of the awards committee.

The first was presented to Harrison S. Sayre of Annapolis, Maryland, through the Baltimore Camera Club, and the second to W. K. Raxworthy of Cicero, Illinois through the West Suburban Camera Club. Sayre was awarded a medal in recognition of his outstanding service as color chairman of the PSA convention in Baltimore. Raxworthy's award was in recognition of his distinguished service to color photography in conducting the testing service and color print activities of the Color Division.

#### Remember These Deadlines

For the International Color Slide Competition for individuals, the first contest deadline is September 20, 1951, and the slide should be sent to Mr. F. R. Frost, 117 East 72nd Street, Kansas City, Mo.

For the National Club Slide Competition,

get entry form to Merle S. Ewell, 1422 West 48th Street, Los Angeles, Calif. by September 25, 1931.

There are no entry fees in either competition for Color Division members. Nonmembers pay an entry fee.

#### Foreign Slide Set Exchange

Seven international slide sets had a total of 205 bookings in 28 states, Hawaii, British Columbia and the Canal Zone during the past two years, according to F. B. Bayless, Supervisor. These sets were from India, England, Canada, Mexico, Holland and Japan. Each set which is retained in this country for approximately a year, is scheduled for showing in from 25 to 35 clubs. At the present time, additional sets are in preparation in India, New Zealand, England and South Africa.

Since these are exchanges, the Color Division supplies sets from our workers for setduling in all countries from which slide sets are received.

Additional exchanges with foreign countries are desired. PSA members in foreign countries, who are in position to accumulate sets of 50 slides from various workers in their countries, are invited to get in touch with F. B. Bayless, 320 Cowell Avenue, Oil City, Pennsylvania, U.S.A.

#### Racine's Eleventh Show

The Racine (Wisconsin) Camera Club recently held its eleventh annual color slide exhibit. This forerunner of the popular color exhibitions of the present day was judged by Ivan Dimitri, the slides being sent to him in New York. The winning slides were exhibited in a light box arrangement and shown part-time at the Wustum Museum and in the lobby of the First National Bank.

While the first show was national in scope, more recently the exhibits have been restricted to Racine and vicinity. About 500 slides were entered in the last show, of which approximately 130 were accepted. All three judges, William Defner, A. C. Klein, and Walter Sheffer, were present at the showing of the slides and made comments. Some rejects were shown and reasons given for non-acceptance.

#### No Forgotten Men at PSA Convention

The man behind the camera will be showered with information at the PSA Convention to be held in Detroit, October 10 to 13. Fact is there will be literally a cloudburst of information: all of it will be presented in a way that Mr. Average Photographer can understand.

We have told you previously about Fred Bond, Rodger Ross, Helen Manzer, W. H. Savary, and Maurice LeClair, but let us tell you something about those features that you can participate in yourself.

A. C. Klein, that color pictorialist from Milwaukee, will have charge of the Slide Clinic. As his cohorts he has chosen people that can make good slides consistently, and they know why they do it, and will be able to assist you in your attempts. Bring along a few of your slides for criticism. "A.C." has promised that not only will he evaluate them for you, but if improvement could have been made methods of doing so will be suggested. All Color Slide Makers are going to thoroughly enjoy this important

part of the Convention.

Still another remarkable man will assist the color worker. He is that beloved rural character so well known to all PSA members, and he will appear in person for the first time at the Detroit Convention. Johnny Appleseed has a profound knowledge of photography; so be not fooled by the cut of his country garb. Johnny will see to it that all of your questions regarding color are answered. This program will be just as good as your questions, and so Johnny hopes that all conventionaires will come prepared with tough ones. understand that Johnny is also preparing a lunch, that he will share with the entire membership Friday afternoon, but Johnny has always been that-a-way-he wants everyone to be happy.

While on the subject of food, Color Members will not want to miss their Division Luncheon Friday noon, nor the Barbecue Wednesday afternoon in Canada. Canadian steer beef always rates high with Detroiters—it is juicy and tender. Johnny says he expects to be there too with a hamburger in one hand, and his camera in the other pointed at the Detroit skyline backed by a blue October sky. Bet Johnny will get a good picture at that, and by the way—Don't forget the Slogan, "Detroit for Fun

in '51."

#### Coming Color Exhibitions

PSA, Detroit, Oct. 10-17, deadline Sept. 7. All sizes, four slides, \$1. Also color prints. Forms: Isadore Berger, 2200 National Bank Bldg., Detroit 26, Mich.

Tules, Oct. 8-9, deadline Sept. 30. Four slides, \$1. Forms: Frances Elsperman, P. O. Box 2077, Tulsa, Okla.

Victoria, Nov. 11-18, deadline Oct. 13. Four slides (including 2½), \$1. Forms: Stephen Jones, 2382 Lincoln Rd., Victoria, B. C., Canada.

Mississippi Valley, Oct. 29-Nov. 7, deadline Oct. 17. Four slides, \$1. (Also color prints). Forms: Alvin Prasse, 4152 Botanical Av., St. Louis 10, Mo.

Chicago, Nov. 9-18, deadline Oct. 20. Four slides, \$1. Forms: Russel Kriete, 4949

Byron, Chicago 41, Ill.

Chicago Lighthouse Stereo, Dec. 4-8, deadline Nov. 10. Four stereos, \$1. (Realist mounts or identical dimensions, 13% x 4 inches). Forms: G. W. Blaha, Chicago Lighthouse for the Blind, 3323 W. Cermak, Chicago 23, Ill.

Milwaukee, Dec. 6-Jan. 7, deadline Nov. 24. (Also stereo). Forms: R. J. Lauer, Milwaukee Glove Co., 807 S. 14th St., Mil-

waukee-4, Wis.

Cuba, Dec. 14-Jan. 11, deadline Dec. 4. Four slides (up to 3½ x 4), \$1. Forms: Club Fotografico de Cuba, O'Reilly, 366 altos, por Compostela, La Habana, Cuba.

PSA CONVENTION
Detroit, Mich., October 10-13
PSA JOURNAL, Part 2, Sept. 1951

PSA PHOTO-JOURNALISM DIV

All members of the PSA Photo-Journalism Division have received another dividend for their membership—this time a copy of "News Pictures of the Year—1951," a 96-page book that is reviewed elsewhere in this issue.

The Division has purchased 50 extra copies of the \$1.00 book which will be sent free of charge to the first 50 photographers who join the Photo-Journalism Division. If you are not already a member of the Division, send \$1.00 dues to PSA Headquarters, 2005 Walnut Street, Philadelphia 3, Penna., with a request that you be enrolled in the PJ Division. The first 50 applying will receive "News Pictures of the Year—1951" as their first dividend.

It pays to belong to the PJ Division!

## **PSA NATURE DIVISION**

HARRY R. REICH 286 Schenck Street, No. Tonawanda, N. Y.

Are all members of the Nature Division set to make the trip to the PSA National Convention in Detroit next month? This column has a hunch that the 1951 Convention will be one for the books, one that you will be sorry to have missed should you fail to attend. Knowing the pep and enthusiasm of the Detroit crowd is a guaran-

tee of a wongerful show.

The dates for the Convention are October 10, 11, 12, and 13. The program as outlined at this writing is laden with outstanding talent and gives promise of moving with the speed and interest of a three ring circus. The Convention Committee has not forgotten that there may be members of your family who may be more interested in being entertained than in attending some of the programs that you yourself will be interested in, and for that reason have arranged some attractive side shows for the better half of the family.

The program is well spotted with fourstar attractions for the Nature enthusiast. For example, there is W. H. Savary's program on "Long Focal Length Lens Problems in Bird Photography," and the Johnny Applesed program in which H. Lou Gibson will serve as the Nature Division Johnny. Louis Quitt will show a superb set of nature slides and offer some inside tips on the making of them. Robert C. Hermes, official photographer on the Royal Canadian Institute's expedition to the Great Ungava Crater (see May PSA JOURGAL, page 260, etc.), will show us one of his marvelous color movies, "Exploring Canadian Bird Islands" which have made him so popular on the lecture platform. Mr. Hermes is an off-staff lecturer for the Audubon Society.

#### Color Slide Competition

The second Nature Division Color Slide contest of 1951 will be judged in Chicago, the deadline for entries being September 15th. The chairman for this contest is Willard H. Farr, 6024 Dakin Street, Chicago 34, Illinois.

This contest is open to all members of

the Nature Division, as well as non-members of the Division. There is a fee of fifty cents to the non-members who wish to submit. All slides should carry the maker's name, address, the title of the slide, and should be spotted in the lower left corner. The slides are restricted to 2x2 size. Return postage should be included with entries.

There will be three silver medals awarded to the first, second, and third prize winners and honorable mention ribbons to the next eight places. The medal winners will probably be reproduced in PSA JOURNAL, if space permits. Comments and criticism will be furnished to all contestants who request them with their submissions.

#### Who's Who

The "Who's Who in Nature Photography" is prepared from the catalogues of the various nature exhibitions, and the Nature Division is aware that there is always the possibility of error in the catalogues themselves. For that reason the Secretary of the Nature Division has requested that any errors in the "Who's Who" listing be brought to her attention so that the error may be rectified in this column in a future lessue.

#### Zoo Contest

The 1951 Fifth Annual International Zoo Photography Contest and Exhibition, Chicago Zoological Park, Brookfield, Illinois, will be held from October 1 to October 31, 1951. This contest and exhibition is sponsored jointly by the Nature Camera Club of Chicago and the Chicago Zoological Society. The judges are R. L. McIntyre, photography editor, Chicago Tribune; Les Schierholtz, professional photographer, Bell Telephone Company; and Robert Bean, director, Chicago Zoological Park.

The deadline for entries is September 15.

There will be 23 cash prises for prints, and
23 prizes for color slides. The prizes are

as follows:

First Prize \$50.00 (If taken at Brookfield Zoo \$100.00)

Second Prize \$25.00 (If taken at Brookfield Zoo \$50.00)

Third Prize \$10.00 (If taken at Brookfield Zoo \$20.00)

Twenty Honorable Mention Prizes of \$5.00 each, if taken at Brookfield Zoo \$10.00.

The same prizes will be awarded for prints and for slides. A special award will be given for the outstanding print of the past five years, which will be chosen by the above jury, plus two members of the Chicago Zoological Society staff, from the prize-winning photos of the 1947–1948–1949–1950–1951 contests.

Entrants may submit up to six prints and/or six slides. Prints must be not less than 8x10, mounted on 16x20 mounts. Slides may not exceed 3½ by 4 linches. Prize winning prints and slides become the property of the Chicago Zoological Society unless the prize is refused by the exhibitor.

Prints and slides should be shipped separately. In view of the fact that there is no entry fee for this contest, sufficient postage should be included with the entries for their return.

## CAMERA CLUBS

H. J. JOHNSON, FPSA 2134 Concord, Chicago 47, Illinois

Introducing the Judge

A judge should be selected for his photographic abilities, yet when he is introduced to the members the introduction usually sounds as if he were selected for his ability as a photographic politician.

This is the way it usually goes: "This is Joe Blank, president of the Soandso Camera Club. He is an ex-president of the Other Camera Club, and has been secretary of the Council and also editor of the Council Bulletin."

While a knowledge of camera club problems, as indicated by holding office in a club, is of some importance because it implies a knowledge of judging methods, probable quality of the pictures to be judged, etc., this knowledge should be considerably secondary to the picture making qualifications of the judge.

In the introduction, emphasis should be placed on his photographic accomplishments. These could be his success in exhibitions, high standing in his own club's competitions, pictures published in magazines, etc. Also helpful could be reference to any art training, and to any teaching experience. Then, finally, refer to officeholding experience, preferably listing only the highest current office held, and the highest previously held.

If you will introduce your judge this way, your members will feel that you have selected one who is qualified to evaluate their efforts. And your judge will feel much more comfortable in knowing that his picture qualifications were more important than his patronage possibilities.

#### Johannesburg Photo & Cine Society

Reported in the bulletin from this South African society was the program for one of its coming movie meetings:

Chairman's remarks

Cine tips by the secretary
"St. Helena,"—8mm, 400 ft. color film, by D. Beadle

'Titling without a Titler," lecture by F. G. Abernethy

Accesses.

5. Tea interval.

6. "Texistigar,"—16mm, 400 ft. color film by H. H. Walton

7. General discussion on titling

Do you see there what we do, and which might be of great help in your club's attendance problem? There are three very definite points for your consideration.

The first thing we noted was No. 5. Rather different than our usual "few minutes intermission" isn't it? Sounds like a more gracious way for a program "break." It wouldn't take any more time, would require only hot water and tea. We are confident that if you try it in your club once or twice your members' interest will perk up at this bit of variety.

Next, note Nos. 3 and 4. One part entertainment; one part instruction. Experienced program chairmen know that attendance will be good when an "entertainment" program is scheduled (but that there will be little progress in the club's aim to help make better photographers); and attendance will be much lower when straight instruction material is presented (meaning that too few members will be reached, in view of the club's real purpose). A balanced program keeps attendance higher, teaches a larger number. If you will consider this carefully, you can work out a similar balance for your own club.

Finally, note the number of items listed. If you miss the significance, it is this: change of pace! "Change of pace" can do wonders in keeping members' interest alive during a whole meeting. A long, monotonous program bores, defeats its own purpose because "learning interest" cannot be maintained. But with change in pace, interest is revived. The requirement is usually met with shorter program components, enabling a slightly different direction, or tempo, with each one.

These are the "secrets" of good program presentation. They are yours to use.

#### Photographic Guild of Detroit

Among the unusually successful clubs in PSA is the "big, blue, and glossy" Detroit Photographic Guild, which is of particular interest at this time for the part its members have in the Detroit PSA Convention.

There are a number of factors important in building the success of this club and these may be helpful to other clubs looking for methods for improvement.

One of these is its recognition of the importance of outside contacts, as indicated by wide participation in competitions and other activities. Many clubs avoid outside competition because it is disturbing to their smugness to find they are not as good as their members tell each other. Many rationalizations are used, such as "members not interested," "judges not good enough," etc. The Guild, of course, is not one of these, has no fear of competitions, and its confidence is confirmed by its record: first this season in the Club International Print Competition; first in the Detroit Council competition; high in the Club International Slide Competition (and it won't drop out of this competition merely because it was not the top club this time!) In The Camera's contests it has been one of the top clubs for years.

Another factor is the club's interest in its newer members, as indicated by its special instruction sessions for them just prior to regular meetings, and by its advanced member tutors who take groups into their own homes for personal instruction. This is, of course, the answer to those who would say, "but the Guild is fortunate in having a nucleus of high quality workers." It is fortunate, yes, in having these, but it looks to the future and helps develop additions to this nucleus. As the oldtimers move on, there are qualified replacements and the Guild will continue to be a high ranking

Yet another factor is the club's progressiveness. For example, though its members were predominantly black-and-white workers, it made an early and important place in its setup for color. Its bulletin (also progressive in its makeup) reflects the vitality and push of the club.

Finally, the club's officers have been high in ability. While there is a degree of good fortune for the club in this, it also reflects the morale and spirit of the club. Good officers develop in such an atmosphere. (Many clubs have officers who are "too busy" to do their jobs, which merely means that they don't have sufficient ability and the "too busy" is the cover-up for time spent in front of television, etc., where no ability is required.)

The Guild is a large club and it is easy to assume that it can do things because it is large. Usually it is the other way around: a club which demonstrates its ability at-

tracts more members!

#### Saranac Lake Camera Club

In a general background of club bulletins, publicity items, etc., received from scores of camera clubs, one club this month is outstanding without having made any bid at all for publicity. All it did was state "no set available" on a card which had been sent to it on which to list print sets available for exchange with other clubs.

Is it unusual to get a reply card with a note on it? It is quite unusual to receive back a self-addressed postcard when the organization to whom it is addressed feels that it is not involved! In the first place, it is rarely that more than a third of such cards are returned even when the organizations are directly involved.

There must be reasons for such inertness and investigation reveals the following are the most important:

1. Person to whom addressed no longer holds responsible position (does not intend to let himself be inconvenienced by passing along to the person currently responsible.)

2. Properly authorized person (usually secretary) receives, but lacking in imagination, considers his job to be to file away someplace everything received. (It is surprising, the number of camera club secretaries who do not pass on to responsible members of the club material which they receive for the club, and not as an individual!)

Proper person receives, but lacking ability to make a clean cut prompt decision, stews over the trivial question until too late for proper action.

Therefore you can see why a club which is unusually efficient or conscientious in the "reply card" questions makes itself outstanding in the general desert of inertness.

And, as always, the individual is the club. so that outside opinion of a club must be formed by experience with the individual.

The individual in this case was Grant Reed, and he has made a very favorable impression with us for his club, Saranac

#### Angel DeMoya at Coral Gables

We received an appreciative note from the Coral Gables CC (Fla.) about a visit there by Angel DeMoya. This is under-standable because DeMoya, Cuban repre-sentative of PSA, has two slide shows of high quality, one on Cuba and one on Mexico. He has presented these at a number of clubs, usually with SRO audiences, and these are the shows Coral Gables saw, with a new surge of enthusiasm for the club's slide makers.

#### 1950-51 Club Print Competition

Final complete tabulations for the International Club Print Competition gave the Detroit Photographic Guild and the Central California Council the A and B plaques for the season. The individual grand prize winners for the competition were:

"On the Spinnaker Run," by J. Elwood Armstrong (Detroit Guild) "Sailing," by A. Aubrey Bodine (Baltimore) "Symbols of Strength," by Charles Buker (De-

roit Guild)
"Impatient Onions," by Lowell Miller (Kodak)

Cumulative scores for the top 25% of the clubs were as follows:

Class A	
	Points.
Photographic Guild of Detroit	422
Baltimore	418
Kodak	416
Green Briar (Chicago)	372
Boston	362
Germantown (Philadelphia)	351
Ft. Dearborn (Chicago)	347
Class B	
Central California Council	330
Santa Maria (Calif.)	324
Blackhawk (Iowa)	321
Shorewood (Milwaukee)	311
Bartlesville (Okla.)	302
North Shore (Mass.)	300
Berkeley (Calif.)	291
Memphis (Tenn.)	291
San Luis Obispo	275
Lens & Shutter (San Bernardino	272
Orleans	259
Costa Rica	256
Owego (N. Y.)	252

This brings to a close the second phase in the long history of the competition, one of the oldest continuously held in the world, originally being started in the early 1920's. For years, it was managed by the old Camera Clubs Division. Then it was proposed that it be transferred to the Pictorial Division to help round out that Division's club services (since Color Division already had an equivalent slide compe-The transfer could not tition.) accomplished at first, so the special Camera Clubs Committee, organized to develop additional services for clubs, continued the management of the competition, and developed it considerably in amount of participation, increased its value to participating clubs by more prompt and complete reports, by increasing the number of prizes, by adding criticisms for each print submitted, etc. And the competition entirely paid its own way from entry fees.

Finally, the transfer materialized, and the competition director for Pictorial Division will be Robert Lauer (Milwaukee). Under his management we believe the fine record of the previous director, Blanche Kolarik, APSA, (Camera Clubs Committee member) will be continued.

## STEREO

DON BENNETT

While wondering what would be a good subject for this stereo column, we ran smack into it! Dropped in on a friend who was mounting some stereo shots and found he was having trouble. The mounted stereos didn't look just right. In fact, it was only pseudo stereo that was bothering him. All were transposed.

It seems our friend had picked up the roll, found the light-struck end was out

and decided without further checking that it must be the front end of the roll. Also, since there was a blank frame, he was sure it was the front.

The film had been badly over-exposed and that made it a little more difficult to check. We took the end he said was front, made like it was in the camera, emulsion away from us and upside down, and it looked like the back end. The fogging could only be attributed to an accidental opening of the camera so both ends became fugged.

We didn't think to check for the notch between the perforations of the right-eye picture. (Latest model Stereo-Realist cameras have this identifying notch.) But the simple practical check was enough to show the trouble.

Selecting one of the best frames, we found the pseudo stereo was there, with the house in front of the tree instead of the tree in front of the house. Transposing, the house moved back behind the tree and we had true stereo once more.

One amusing thing about this little incident was that my friend had discovered the mounting instructions to be wrong. Hadn't he followed them word for word and not a single pair came out right? Miraculously, as soon as he started working from the correct end of the film the instructions were no longer incorrect!

Don't expect too many ten-dollar words. You only paid ten bucks for your PSA membership and that entitles you to only one word like that each year. This column is written for stereo fans, not addicts.

We've known about stereo since the childhood days when we were kept quiet at an aunt's house by her parlor stereo outfit. It kept us quiet only because we hadn't reached the "ooh and ah" stage.

We didn't get into stereo because of the high cost of good stereo cameras and the bother of it, just like thousands of others. And there must be thousands just like us, because our Stereo-Realist is number 25,469

That seems to indicate that about 25,000 other people were as lazy about mounting and aligning as we are. Then too, stereo didn't really come into its own until color made it easy and beautiful.

Easy, because the processing is done for us; easy because we can have even the mounting done for us; easy because the modern 35mm stereo cameras are so simple to use.

Beautiful, because to our untutored eyes color stereo is very close to the real thing. Most black and white (hereafter B&W) stereo looked like planar objects jigsawed out and placed at the correct distances . . . . depth without roundness.

So the combination of color and the Stereo-Realist camera made us real stereo fans. And that was back in 1947 when the first Stereo-Realist was shown at the Cleveland Convention of the M.P.D.F.A.

Learned a good stunt from reading "The Realist News." How to save frames, in one easy lesson. It isn't titled "how to get more" but you can do it.

Next time you have your Realist unloaded, take the back off and lock the sprocket by turning it. (With the rewind button on "A," of course.) Now press the release button and move three sprocket teeth counter clockwise. Now, with a penknife or other sharp edge, scratch the finish from between teeth three and four.

When you load, catch the end in the take-up spool, drop the magazine in the other end and replace the back. Turn the knob until the sprocket locks again. That draws an inch and a half of film out of the magazine. If you want, you can put your slate mark (see next item) on through the left lens.

The instructions say that you should turn twice after the first sprocket engagement. If you want an extra pair of pictures, you can turn only once after catching the end. There is a bare chance that you might have end fog on the first frame if you do this, especially if you load in bright sunlight. That could be the reason they say to turn twice. Anyway, you can try it.

Now for the mystery of the slate mark. In Hollywood, before every scene, they hold a slate in front of the camera. The slate, which once was just that, a child's slate, carries scene and take number, company, cameraman's name, director's name and other data. Every take of film is thus positively identified.

Up in Rochester they have what might well be a Bureau of Missing Persons . . . . the persons being the owners of unidenti-

Hundreds of rolls of movie and 35mm film turn up missing their owners every year because the owner forgets to write his name on the tag, and on rare occasions because of a mishap in the processing plant.

Now the David White Co. has come up with an answer. It is a slating device that folds up smaller than a pack of cigarettes, yet is ready for use in seconds. It has a spring mounting ring to fit over the lens, a supplementary lens to bring it into focus and a card holder on which you write your name and address and any other data you want to record.

You slip the slater over the left lens after giving your film that first wind and give any old exposure in decent light, or a short time exposure if you are working indoors by flash and must expose it by room light.

Tags can be lost, you can forget your right name, and still your film will come back to you because it is indelibly impressed right on the roll.

This little slater (they call it by the formal name of "film identifier") is such a good idea that they have promised to make it also with a Series 5 ring to fit ordinary 35mm cameras, Rolleis and the like. On regular cameras you sacrifice one frame as insurance that your film won't get lost. On movie cameras the loss of film is inconsequential. If you've ever lost a roll of film, you'll agree that this is pretty cheap insurance.

That's all for this time, but remind me to tell you about the power of stereo over TV.

IT'S DETROIT FOR FUN IN OCT.





## Print of the Month Contest

The May Print of the Month Contest was judged at Detroit, Michigan with the judges announcing the following results:

Beginners Group, Pictorial Class 1st—Rolan Duffield, "Poor Visibility" 2nd—A. J. Potamianos, No title

Beginners Group, Action Class 1st—Harvey V. Fondiller, No title 2nd—Ralph McCann, No title

Beginners Group, Nature Class 1st—Mrs. Julia Foss, No title 2nd—George C. Sculley, "The Dawn Patrol"

Advanced Group, Pictorial Class 1st—Charles Buker, "Symbols of Strength" 2nd—Eugenia Buxton, "Abajo"

Advanced Group, Action Class
1st—Lionel J. Tidridge, "Stepping Ahead"
2nd—Irving Rosen, "Try for Score"

Advanced Group, Nature Class 1st—Arnold Kidson, No title 2nd—Earle W. Brown, "The Worm Turneth" The June Print of the Month Contest was judged at Cleveland, Ohio, and the judges John O. Hay, Wilbert C. Pfahl, and P. J. Ziegler announced the following results:

Beginners Group, Pictorial Class 1st-Masaru Taketa, no title 2nd-Mrs. Julia Foas, "Old Miner"

Beginners Group, Nature Class 1st—Mrs. Julia Foss, "High Tone" 2nd—H. J. Mahlenbrock, "Birch Bark"

Beginners Group, Action Class 1st-Masaru Taketa, "Fore"

Advanced Group, Pictorial Class
1st—E. B. Sigler, "Witches Brew"
2nd—Anders Sten, "Madonna with Spider"

Advanced Group, Nature Class
1st—Walter J. Pietschmann, "People Are
Funny"
2nd—Anders Sten, "Pine Forest in Snow"

Advanced Group, Action Class 1st-Irving Rosen, "Taps in Rhythm" 2nd-Walter J. Pietschmann, "4 High"

## **BOOK REVIEWS**

THE WORLD OF THE LEICA, by Philip Johnson, The Fountain Press, London, England, 162 pages, 8x10, illustrated, cloth, \$4.00, 1950. Available from PSA JOURNAL, postpaid.

For some years there has been controversy in the photographic world as to whether the Leica is camera or epidemic. This book, with 29 pages of informative photographic text and 132 photographs made by Leica-owners in 24 different coun-

Top left: Copyrighted photo by Arnold Kidson. Second: "Old Miner" by Mrs. Julia Foss. Third: "Poor Visibility" by Rolan Duffield. Bottom: "Taps in Rythm" by Irving Rosen. Below: Action by Harvey V. Fondiller.



tries, perhaps does little to settle the controversy, but much to prove that marvelous photographs of amazing variety are being made with the Leica.

The pages of text present much information of value to the owner of any 35mm camera. They go so far even as to admit that small cameras, including the Leica, have some shortcomings. Still, they leave no doubt that the photographer who accepts the challenge of the miniature and is prepared to apply the proper technique, can produce remarkable results photographically.

Each of the published photographs is accompanied by data on exposure, lens, and filter. Much is made of the value of selecting that lens which best handles the subject matter, and pointed reference is made in the text of the various illustrations.

The pictures are of high photographic quality and interest, and, furthermore, reflect the difference in the perception of photographers of the various nations. It is strange that people see so differently, and also that identical cameras will produce such different, if equally excellent, pictures in different hands.

There are enough different types of photographs here to please all the isms and schools, although the pictures generally border upon the conservative and reflect little or nothing of the bizarre which calls itself modern. In fact, the Leica and its lenses are praised for their ability to bring every important element of a photograph into acceptable sharp focus.

Collections of Leica photographs traditionally have stimulating effects upon photographers. This volume seems to be no exception.

PSA JOURNAL, Part 2, Sept. 1951

FILM AND ITS TECHNIQUES, by Raymond Spottiswoode, University of California Press, Berkeley, Calif., 516 pages, 6x91/2, illustrated, cloth, \$7.50, 1951. Available postpaid from PSA JOURNAL, Kutztown, Pa.

Here is a behind-the-screen textbook on motion pictures, 16mm and 35mm, silent and sound, monochrome and color, theatrical and non-theatrical, documentary and otherwise. Basically, it is concerned with the production of the documentary film from idea to finish, but it treats in detail that vast multitude of thought, equipment, labor, planning, hoping, which enter into the making of any film

It is, in effect, a textbook for study and reference. The amateur moviemaker who wants to learn all about motion picture production, the technically-minded, and he who seeks a job in movie production, will find it a gold mine of information. It is informative reading also for those photographers who wish to learn how Hollywood achieves special effects and trick shots.

They're all here!

The chapter on "Things to Come" will fascinate many readers. The author, throughout his book, is not too happy about motion picture progress, explaining that, in so huge an industry, the status quo is the rule. He is inclined to believe that, in commercial movies, scientific progress is a myth and technical revolutions somewhat less than welcome. However, he sees possibilities of the distribution of film-showings by television, development of television theaters, elimination of the film development process, cameras controllable from a distance, three-dimensional photography or stereo applied to movies, and the production of original music from sound tracks-even music without instruments through the use of synthetic sound!

OUT OF THIS WORLD, Across the Himalayas to Forbidden Tibet, by Lowell Thomas, Jr., the Greystone Press, New York, N. Y., 320 pages, 51/4x81/4, illustrated, cloth, \$3.75, 1950. Available from PSA JOURNAL, postpaid.

In the old days travel books explained that yaks move with majestic slowness over a stony Tibetan field and left the reader to create his own ideas of yaks, majestic slowness, and stony Tibetan fields. In this volume of travel and adventure, photographs supplement the fast-reading text to show exactly the appearance of yaks, stony Tibetan fields, and other scenes and subjects which, being outside his experience, the American reader scarcely can comprehend, much less visualize.

The Thomases, radio-commentator father and camera-toting son, say they are among the few Americans ever to penetrate Tibet. Being experienced reporters they could be relied upon to return with a thrilling story,

Top: "Steaming Ahead" by Lionel J. Tidridge. Middle row, left: "Fore" by Masaru Taketa of Honolulu. Middle row, right: "4 High" by W. J. Pietschmann. Bottom, left: "Madonna with Spider" by Anders Sten of Vika, Sweden. Bottom, cibbt. By Mr. Luit Experience. right: By Mrs. Julia Foss.

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but this book combines words and photographs to become utterly fascinating.

More than 100 of the photographs made in Tibet appear in the book, some 30 of them in color. Naturally they have lost quality in reproduction, but the Thomases, blessed with "camera eyes," caught the spirit as well as the substance of the place.

It will interest the photographer to know that the pictures were made with Rollei and Leica. It will interest photographers to see how both the color and monochrome pictures make the book live, and also how the photographs contribute to the book without calling attention obtrusively to themselves.

For the most part they are natural photographs, that effortless, unposed type of picture which is so impressive and effective—and so unlike those customarily made on expeditions. The pictures are part of the book, and part of the story, and part of the journey—all parts which make up a delightful whole.

Pictorially and textually this book describes Tibet as it is, a country undeveloped, by Western standards, yet aware of itself, content with its lot, and having good and sufficient reasons for being what it is. No highways, no newspapers, no radio, no modern improvements—and no complaints! The contemplative Tibet people accept what they have, and seek no progress. They have their minds on the next world and are not particularly keen about this one!

The Thomases accept the situation as they find it, and report Tibet, by picture and word, as the people of Tibet want it and have made it.

NEWS PICTURES OF 1951, edited by Clifton C. Edom, APSA, published by Louis Mariano, Chicago, Ill., 96 pages, 53/428/4, illustrated, paper, \$1.00, available from PSA JOURGAL, postpaid.

This volume, which has been sent to all members of PSA Photo-Journalism Division as a special dividend, presents around 100 news photographs adjudged best in the competition jointly sponsored by the University of Missouri and the Encyclopedia Britannica. In this eighth annual competition, Alfred Eisenstadt won the distinction of becoming the "Photographer of the Year."

News pictures have an unfortunate habit of deflating themselves and of hiding their real quality once they are transplanted from the newspaper page, but the illustrations in this volume remain top-flight pictures and are enjoyable as such. Of especial interest are the sequences, specifically Erich Auerbach's photographic study of London's East and West Ends and the strangely different people of the two compass points who dwell in the same city but, being worlds apart, never meet.

Interesting also are the two pictures which are tied for first prize, utterly dissimilar in subject matter, yet allke appealing. All these pictures are, of course, creations of the moment, yet many seem to have that studied excellence disassociated with time. The average amateur will long

for the press photographers' opportunities yet, if he will study this book, he will discover that it is possible for the photographer to create opportunity.

SALOW PHOTOGRAPHY, edited by Robert Brightman, Fawcett Publications, Inc., Greenwich, Conn., 144 pages, 65/439/4, illustrated, paper, 75 cents, available postpaid from PSA Journal.

Here is a refreshing collection of socalled "salon" photographs which proves that salons do not have to be dull and that photographers have a worki of subjects for their selection. There are informative articles also, on fashion photography with the 35mm camera, on portraiture with a box camera, on nude photography by Peter Basch, and on making photograms by Joseph Breitenbach. There are informative articles on cropping to produce better pictures, written by Edna Bennett, and an absorbing illustrated story about a new photographic busband-and-wife team, Diane and Ray Witlin, who find extensive picture material in places like New York's Futton Fish Market.

AN INTRODUCTION TO THE SCIENCE OF PHO-TOGRAPHY, by Katherine Chamberlain, The Macmillan Co., New York, 292 pages, 6x9¾, illustrated, cloth, \$6.50, 1951. Available from PSA JOURNAL, postpaid.

This informative volume achieves several objectives, the best of which is to give the amateur photographer, in simple terms, an understanding of the underlying sciences of photography. The least desirable of the several services the book renders is to present the story of photography in the guise of a classroom text and thereby to convert a highly intriguing subject into something rather dismal.

However text-bookish the volume becomes, it does present a wealth of information which many a photographer ignores on the theory that it is too technical for his simple mind to grasp. In this book the purely scientific data seems to be sound and accurate, but the author appears to overlook the fact that there are many, and sometimes completely unscientific, ways of achieving the same ends.

At the end of each chapter are questions and problems, the answers and solutions to which presumably may be found in the text, and the reader is invited to test his powers of retention and analysis. Possibly of more practical help is a list of books, also at the end of each chapter, which refers the reader to extended information.

Amateurs accustomed to reading treatises on photography which tell them what to do, and invite them to do it, probably will get a somewhat discouraging reaction from this volume and the impression it creates that photography is deeply technical and only the scientist should essay it. At the end of the book the author admits to being dilapidated too, but, with a final burst of energy, suggests that while some pretty deep sciences are the basis of photography, everybody can go out and take good pictures and have a fine time.

PSA JOURNAL, Part 2, Sept. 1951

## Jentative Program, PSA Convention, October 10-13

Wednesday, October 10	-PD-Photographic Guild of Detroit, "Big
9:30-11:45 AM-Registration, Book Cadillac Hotel	Blue and Glossy"
9:30-10:30 AMPSA Board of Directors Meeting, Parlor H	-P-JD-News and Magazine Photography
9:30-11:45 AM-TD-George T. Eaton, APSA, Eastman	3:15- 5:00 PM-CD, TD-Color Clinic
Kodak Co., "Symposium on Industrial	-MPD-Shooting Your Movies Clinic
Photography <sup>n</sup>	-PD-Maurice Tabard, "Creative Photography"
1:30- 3:00 PM General Membership and National Council Meeting	-P-JD-Michigan State Police, "Crime Lab- oratory"
1:30- 3:00 PM-TD-George T. Eaton, APSA, Eastman Kodak Co., "Symposium on Industrial	6:00 PM—MPD—Banquet
Photography"	7:30- 8:30 PM-TD, For All Divisions, "Photography Come
3:15- 7:00 PM-Barbeque, South of the Border to Canada	of Age"
0.00 0.00 D 36 114 16 000 11 DC1 V.4/11	8:30-10:00 PM-PD, For All Divisions, Yousuf Karsh, FPSA
7:30- 8:30 PM-Progress Medal Award & Official PSA Exhibi-	Saturday, October 13
tion Opening at Detroit Institute of Arts	9:30-10:30 AM-CD-Color Slide Salon Showing
8:30-10:00 PM-Movies, Color and Nature Slide Exhibit-	-MPD-Errors in Movies Clinic
Showing of Technical Slides at Detroit In- stitute of Arts	-PD-Miss Doris M. Weber, APSA, "Com- mentators Conference"
Thursday, October 11	9:30-11:45 AM-ND-Nature Slide Salon Showing
9:30-10:30 AM-CD, ND-W. H. Savary, "Long Focal Length	-TD-Technical Papers
Lens Problems, Bird Photography"	10:45-11:45 AM-CD-Mrs. Helen C. Manzer, APSA, "Unbe-
-MPD-Executive Committee Meeting	lievable Utah"
-PD-Mrs. Olga Emma Irish, APSA, "Portrait	-MPD-Editing and Titles Clinic
of People Like You and Me"	-PD-General Meeting, Dr. C. F. Cochran-
-P-JD, TD-Ford Motor Plant Tour	Recorded Lectures
10:45-11:45 AM-CD-Stereo Demonstration, David White Co.	-P-JD-Common Errors of Subject Handling
-MPD-Showing of Amateur Movies	and the Remedies
-PD-Print Analysis by Experts	11:45- 1:15 PM-ND-Luncheon
-P-ID, TD-Edward S. Purrington, Ford Mo-	PDDirectors Luncheon
tor Co., "Photography in Industry"	
	1:30- 3:00 PM-CD, TD-Rodger J. Ross, "Duplication of
1:30- 5:00 PM-Field Trip to Greenfield Village	Color Transparencies by Three Narrow Band Filters"
7:30- 8:30 PM-MPD, For All Divisions, E. J. Hurd, "Karambi"	-MPD-Ray Eggerstad, "Down the Mighty Colorado"
8:30-10:00 PM—CD, For All Divisions, Fred Bond, "Color Composition"	-Clinic on Sound Motion Pictures -PD-Miss Doris M. Weber, APSA, "Smal
Friday, October 12	Print Judging"
7:30 AM—Council Breakfast	-P-JD-TV and News Coverage
9:30-11:45 AM-Johnny Appleseed, All Divisions-Grand Ball-	3:15- 5:00 PM-CD, PD-Maurice LaClair, "Lighting for
room	Color Portraits"
	-MPD-Amateur Movies
11:45- 1:15 PM-CD, TD Luncheons	
1.10 1.00 ms CD TD Proces of Color Photographs	-TD-Technical Papers
1:30- 3:00 PM-CD, TD-Papers on Color Photography	9-10-10-00 err Annual Browns Count Bally
-MPD-Equipment and Pre-Planning Clinic	7:30-10:00 PM-Annual Banquet, Grand Ballroom

#### NEW MEMBERS JUNE 1951

New Member	Neminator
Alexander, John, Detroit, Mich. (P)	Lvall Cross
Anderson, Alfred D., Honolulu, T. H. (P)	
Anderson, Shoff C., Whitley City, Ky. (MP)	
Argyros, John, St. Petersburg, Fla. (P)	
Arthur, Russell D., Vestal, N. Y. (C)	
Atkins, Milo P., Portland, Oregon (CP)	
Ason, Ralph C., Hollywood, Calif. (T)	
Baer, Herbert R., Chapel Hill, N. Carolina (C)	
Baldwin, William B., Chicago, Ill. (C)	
Beard, John A., Reading, Penna. (C)	Foster Mouse
Bier, Jr., James, Butler, Penna. (P)	Doul Wolfe
Birla, Sudarshan Kumar, Calcutta, India (N)	E Mukawia
Bower, John W., Woodstock, Vermont (P)	
Brooks, Ernest H., Santa Barbara, Calif. (P)	
Bryant, John M., El Paso, Texas (CM)	
Brylski, Dr. Florian J., Buffalo, N. Y. (CMP)	
Burnell, W. Earl, Sarasota, Florida (P)	
Carnahan, Philip B., San Francisco, Calif. (CT)	
Christin, Paul, Quebec, Canada (P)	
Cismondi, Ed., San Jose, Calif. (CPM)	
Clothier, Jean S., Encine, Calif. (C)	
Crus, Gabriel Camarena, Gundalajara, Mexico (All)Chaz	
Darmody, T. Raymond, Detroit, Mich. (P)	
Davis, Mins Georgia, Santa Maria, Calif. (P)	
Devos, Peter E., Moline, Ill. (P)	
Daty. Dr. Chester A., Detroit, Mich. (PC)	or Lookanoff

New Member	Nominator
Ellis, M/Sgt. Wm. F., San Francisco, Calif. (J)	Membership
Ennes, Alfred J., San Francisco, Calif. (P)	
Estlow, R. H., China Lake, Calif. (CNP)	F Qualimais
Evans, Johnie P., St. Petersburg, Fla. (J)	Locilla Salter
Ferguson, N. C., Rochester, N. Y. (J)	
Forney, Miss Dorothy, East Palestine, Ohio (P)J	G Whotene
Former, Manua O. W. Prederment N. 7 (B)	Cuerca Muna
Forrest, Henry O., W. Englewood, N. J. (P)	
Fossler, Dr. Wellington C., E. Moline, Ill. (C)	
Foster, J. Alan, San Dingo, Calif. (C)	Wilber Wier
Fredriksson, Karl Ivar, Kaptensgatan, Sweden	Earle Brown
Goff, Othel G., San Francisco, Calif. (M)	
Graham, Phil, St. Petersburg, Florida (P)	Lucille Salter
Gransick, Mrs. Valora, Clarendon Hills, Ill. (P)	
Grenier, Charles, Town of Mount Royal, Canada (C)Ra	
Grim, Donald B., Rochester, N. Y. (P)	John Mulder
Harris, Dr. Franklin G., Farmville, N. Carolina (P) Fran	
Heim, R. B., Orlando, Fla. (P)	Membership
Henningsen, Mrs. Leoneadi A., Ocala, Fla. (P)Franl	Henningsen
Hersog, Arthur C., Buffalo, N. Y. (P)	Ruth Tremor
Hoffman, Ignace F., Saginaw, Mich. (P)	Earle Brown
Hughes, William B., Bartlesville, Okla. (C)	Frank Heller
Hutchmon, Howard J., Detroit, Mich. (P)	
Jackson, Dr. Randolph M., Richmond, Va. (P)Fran	k Noftsinger
Jean, Dr. Jean-Pierre, Montreal, Canada (CPT)	MacDonald
Joseph, William K., Sillery, Canada (P)	
Judge, Miss Jacquelyn, New York, N. Y. (3)	F Ouellmais
Kelth, Edward W., Windsor, Canada (P)	T Hookins
Kelley, Mr. & Mrs. Winton F., Los Angeles, Calif. (CPT)	
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New Member	Nominatur
Kew, Miss Anne, Montreal, Canada (CJ). Kitchen, PFC Dick D., Fort Knox, Ky. (P). Koch, Jr., Dennis W., San Diego, Calli. (C). Kraft, Richard J., Rochester, N. Y. (PT).	Count Dussins
Kew, Miss Asser, Monutest, Canson (Cf)	Grant Duggins
Kitchen, PFC Dick D., Fort Knox, Ky. (P)	Membership
Koch, Jr., Dennis W., San Diego, Calif. (C)	Charles Wilson
Kraft, Richard L., Rochester, N. Y. (PT)	Phil Maples
Kresge, Martin L., Rochester, N. Y. (P)	Phil Maples
Lange C. L. Doobles Common Product	E Ovellersle
Lacey, C. L., Dorking, Surrey, England	P. Questmais
Lamond, Bob, Lansing, Mich. (P)	Betle McMillen
Leng, Low Check, Singapore, China (P)	Francis. Wu
Lindsay, George, The Dalles, Oregon (J).  MacAskill, W. R., Halifax, N. S. Casada (P)	Lane Foster
MacAskill W R Halifax N S Canada (P)	Membership
Mack, George W., Waterloo, Iowa (CPM)	Backers Course
Mack, George W., Waterico, 10wa (CFM)	Martines Green
Macnab, Dr. John A., The Dalles, Oregon (P)	Lane Poster
McCaffery, Robert, San Francisco, Calif. (P)	Boris Dobro
McCormick, Lt. Col. H. D., New York, N. Y. (PT)	Col. John Mills
McCaffery, Robert, San Francisco, Calif. (P). McCarrolck, Lt. Col. H. D., New York, N. Y. (PT) Mehta, Narnitrai M., Bharnagar, India.	Membership
Michael, Jr., George, Waterloo, Iowa (CP)	Backery Court
Michael, Jr., George, Waterioo, 10wa (CF)	Baroura Green
Miller, Lewis E., Chicago, Ill. (P)	Walter Parker
Miller, Paren L., Lincoln, Nebraska (P)	Stanley Sohl
Moure Mrs. Catherine, Wheeling W Va. (P)	Burbara Green
Moore, C. Bennett, Alexandria, Va. (FC)	. Capt. F. C. Airen
Neeley, Albert V., Bloomington, Ill. (P)	F. E. Fuller
Nelson, W. D., Montreal, Canada (CN)	Raymond Caron
Nicol. Ruth J. Butte. Montana (C)	George Chance
Vester Mrs. Clarke I. New York N. V. (T1)	Baul Amuld
Moore, C. Bennett, Alexandria, Va. (PC). Neeley, Albert V. Bloomington, Ili. (P). Nelson, W. D., Montreal, Canada (CN). Nicol, Ruth J., Butte, Montana (C). Norton, Mrs. Clarice L., New York, N. Y. (TJ). Onahi, Milton K., Chicago, Ili. (C)	The second
Ozaki, Milton K., Chicago, Ill. (C)	Membership
Parlin, Robert G., Minneapolis, Minn. (CP)	Barbura Green
Pathak, H. L., Calcutta, India (P)	C. N. Chambers
Poterson Col Frank Scott Field Dl (CP)	Mombership
Peterson, Cpl. Frank, Scott Field, III. (CP)	stembersulp
Pinard, Mus Marjorie, Tampa, Florida (C)	. Verne Kintworth
Quaintance, Ivan, Columbus, Ohio (P)	Barbara Green
Ouan, Cho-Mau, Hongkong	Francis Wu
Redfield, Walter S., San Luis Obispo, Calif. (CM) Rood, Jr., Harvey William, S. Akron, Ohio (PT)	Mambauhin
Rednerd, Watter S., Sun Luis Outpo, Cattl. (CSI)	Stembersaup
Rood, Jr., Harvey William, S. Akron, Onto (PI)	Jack Clemmer
Rowland, Wm. M., Bakersfield, Calif. (P)	E. F. Hudson
Sadlo, Chester L., Chicago, III. (P). Salter, Howard M., Los Angeles, Calif. (CJ). Sawyer, Russell W., Lynn, Mass. (CJ).	Lionel Heyman
Salter, Howard M., Los Angeles, Calif. (CI).	Bradley Adams
Server Burrell W. Lone Mary (C1)	Washers Streetlish
Shayer, Russell W., Lytte, Mant. (C.)	martinea Statemen
Schitte, Armand F., Philadelphia, Ph. (U.31)	POSTET MOYET
Schnidt, William, Scranton, Pa. (CP)	.C. N. Hutchinson
Schnurr, Herhert, Hilton, N. Y. (P)	Phil Maples
Schouder Walter F. Clauser III (P)	Lional Hauman
Schroeder, Walter E., Glencoe, Ill. (P)	Leonet Heyman
Seelye, Burt M., White Plains, N. Y. (C)	Lugwig Kramer
Shearer, A. E., Ottawa, Canada (C)	Membership
Shearer, A. E., Ottawa, Canada (C)	Membership
Shutt, Carl C., Warren, Ohio	Barbara Green
Crosses Could Bushester W V (B)	Dhil Manley
Strauss, Gerald, Rochester, N. Y. (P)	Pau Mapies
Tepper, Bernard, New York, N. Y. (M). Thomas, Vincent, Ottawa, Canada (JFT)	Membership
Thomas, Vincent, Ottawa, Canada (JPT)	liver W. R. Smith
Tell, Grani, Windsor, Canada (P) Tracer, PFC Louis, San Francisco, Calif	Lionel Tidridae
Traces DEC Louis San Francisco Calif	John Mones
Truck, Fr. Louis, our Flancisco, Calif.	The strenger
Tribby, Dr. William W., Memphis, Tenn. (CP)	Wood Whitesell
Van Chau, Thai, Hanol, Nord Vietnam, Indochina	Membership
Vedder, Claude, National City, Calif. (CP)	Charles Wilson
Vidal Ispacio Bascelo V Madrid Spain (D)	Membership
Vidit, Ignacio marceio I., Maurio, Spani (F7	Membership
Wadsworth, Henry A., San Francisco, Calif. (1)	Membership
Vidal, Ignacio Barcelo Y., Madrid, Spain (P)	nmunity Center PC
Walton, Jr., L. E., Richmond, Va. (P)	Frank Noftsinger
Walton Lloyd R. Indianapolis Ind. (CPMIT)	Membership
Watton, Loyel m., Inmanapoins, 100. (CC-MY). Weitzman, Frank E., Staten Island, N. Y. (C). West, Merrill, Glendora, Calif. (C). White, Luther Willard, San Angelo, Texas (CJT). Whitehill, Richard H., Ozwego, N. Y. (CPM).	Thomas Fisher
Westerman, Frank E., Staten Island, N. T. (C)	I nomine Public
West, Merrili, Glendora, Calif. (C)	Bernard Purves
White, Luther Willard, San Angelo, Texas (CJT)	Lloyd Witter
Whitehill Richard H. Osweso, N. V. (CPM)	Membershin
Wicklund, Dr. M. M., Waterloo, Iowa (C)	Bachara Cores
WICKIGHO, AP., Mt., Mt., WHICKING, HOWA CC	DECUMENT OFFICE
Wilkinson, Dr. Hildegarde, Glendale, Calif. (C)	Dr. Chester Roberts
Wilson, Clarence L., Los Angeles, Calif. (C)	Membership
Wilson, Clarence L., Los Angeles, Calif. (C)	Dr. Guilford Spules
Wong P. W. Rond Oreson (P)	Aubrey Perry
Wong, R. W., Bend, Oregon (P)	CC of Bonney
rager, Leonard A., Boteman, Montana (C)	OC OI BOIRMAN

#### Camera Clubs

The Chicago Chapter, Chicago, Ill
Convair CC, Fort Worth, Texas
Detroit Cinema Club, Detroit, Mich. (M)
Duke City CC, Albuquerque, N. M. (P)
Glendora Color Slide Group, Glendora, Calif. (C) Bernard Purves
Grand Falls CC, Grand Falls, Canada (P)
Johnstown CC, Johnstown, Pa
Old Dominion CC, Arlington, Va. (CP)
Rio Grande Valley Photo Club, Alamo, Texas (P)
Schenectady Photographic Society, Schenectady, N. Y. (CP)Burage Stiles

## NEW MEMBERS JULY 1951

New Member Nominator
Allendorf, J. R., Rochester, N. Y. (C)
Arbogast, William H., Santa Barbara, Calif. (P)
Atkinson, Mrs. A., Chicago, Ill. (CM)
Barron, Malcolm E., Beverly, Mass. (CN)
Bennett, William, Philadelphia, Pa. (CJ)
Bower, Mins Minnie R., Chillicothe, Ohio (P)
Brent, Amelia, New York, N. Y. (J)
Brooks, Walter H., Rock Island, Ill. (P),
Callow, Marjorie S. & W. Warren, Burlingame, Calif. (N) W. W. Callow
Cousineau, Blake V., Detroit, Mich. (P)J. Elwood Armstrong
Crusey, S. M., Maplewood, N. J. (P)Mrs. Franke A. Fassbender
Culpepper, Rogers, Fort Payne, Ala. (C)

New Member	
	Waminata
Doctor Bost H. Hammond Ind. (CM)	Manhanki
Docume, Bert H., riammond, Ind. (C.M)	
Doner, Mr. & Mrs. Altred, Bay City, Mich. (P)	Mrs. Barbara Green
Downie, Frank A., Nairobi, Kenya, East Africa	
Durham, Richard W., Minneapolis, Minn. (CP)	Larry D. Hanson
Ellacott, Gordon, Burlingame, Calif. (CP).	W. Warren Callow
Falkiewicz Conrad I. Tenafly N 1 (P)	Coorn Mun-
Plane Born B' Warrant D. N. J. (F)	George Munz
Figur, Roger W., Plensantville, N. 1. (C) I	ramer & L. V. Shimpin
Foose, F. E., Reading, Pa. (CM)	Foster E. Moyer
Freeze, Dr. James M., Montgomery, Ala. (P)	
Frindman, Rernard, Newburgh, N. V. (CPI)	Reginald G Show
Funck William Dean Mercamburg Do (C)	Michael & Toront
Calma William Can Balant Call (D)	Michael R. Lynch
Gaives, William, San Rainel, Casi. (P)	
Gebest, Charles H., Bronzville, N. Y. (CP)	Norris Harkness
Green, John J., West Hempstead, L. I., N. V. (C.	P) Norris Harkness
Hack, Miss Betty L. Lansing, Mich (P)	Belle McMiller
Hand A Clifton & Leta Luncine Mich (D)	D. H. M. M. Million
Harris Mr. & Mrs. Venis C. San Mississe M.W. S.	CE: E W. MICHIGAN
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Hollewook Sand San Francisco Calif (D)	Frank B Francis
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Jacobs, Monroe S., New York, N. Y. (C)	Owen K. Taylor
Jenkins, A. D. San Antonio, Terras (M)	Mambanhin
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Kessler, Solomon, Portland, Maine (CM)	
Kish, Frank, Cleveland, Ohio (M)	Membership
Kollertz, Mim Naomi, San Diego, Calif. (CP)	Charles I. Wilson
Knowicki Bahart F Plinsbath M I (CPT)	Name to the second
Klowicks, modert E., Estanbeth, N. J. (CJ1)	Atembership
Auchl, Fred H., Rock Island, Ill. (P)	
Kui, Chia Yu, Tawau, British North Borneo, (P)	
Lamminen, Felix W., Waterbury, Conn. (P)	Edward W. Hutchinson
Lazarow William I. Eris. Pn. (1)	Memberhin
Lively I Frank Bastown Toron (BT)	Manhanti
Livery, J. Frank, Baytown, 18km (F1)	ntempermap
Mactelli, Miss Chris, Tallahassee, Fla. (P)	
Major, Ross O., Chicago, Ill. (P)	Lionel Heymann
Martinez, Dr. Jose, Medellin, Colombia, S. A	
Mamerman, Theodore, Datroit, Mich. (P)	Annal DaMass
McKeepen A C I annine Mich (CP)	Belle McMiller
McKeown, A. C., Lansing, Mich. (CP)	Belle McMillen
McKeown, A. C., Lansing, Mich. (CP)	Belle McMillenLarry D. Hanson
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## New KALART Invention Keeps You From Missing Flash Pictures

## B-C Flash Unit with built-in test light shows - BEFORE YOU SHOOT if flash lamps and batteries are O K

'ow often has this happened to you? You get set to take a flash picture - you trip the shutter - and the lamp fails to flash. You have missed your picture!

The new Kalart B-C Flash Unit eliminates the most common cause of flash failure - weak batteries. The flash lamps are fired not by batteries but by a tiny and powerful battery-capacitor power pack. This new superpower method of firing flash lamps shoots the current to them with a sudden wallop. It assures peak lamp performance whether you are using one lamp, two lamps . . . or up to six lamps on long extension wires. And you can forget about replacing batteries for two years or longer.

In addition, the Kalart B-C Flash Unit is the only flash equipment that enables you to make sure - before you trip the shutter - that every lamp is good regardless of whether you are using single flash, two lamps or a sixlamp extension hookup.

This feature alone makes Kalart B-C Flash worth several times its cost. A leading magazine has already provided its entire staff of more than 20 photographers with Kalart B-C Units. Figure it out for yourself. A Kalart B-C Flash Unit will save so many missed pictures and wasted films that it is a positive economy to get one now. Ask your dealer for demonstration.



### The light that says "OK"

Test light is located directly back of reflector and is ready to use instantly. Simply press it down after inserting flash lamp. A brief flash from test light is a signal that battery and flash lamps are good.



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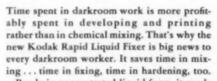
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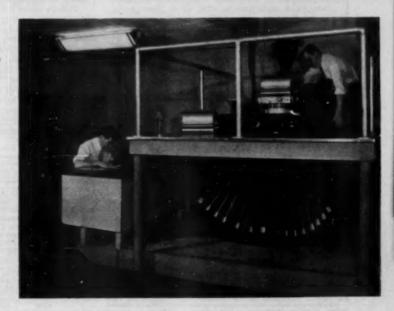
DSQ JOURNAL SECTION 6

SCIENCE AND TECHNIQUE

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THIRD 1951 ISSUE Published with Vol. 17, No. 9 SEPTEMBER, 1951





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## Special Note for Disinterested Readers

The Board of Directors of the PSA asked me last March to review the publications of the Society. In the course of that investigation I have discussed Photographic Science and Technique with a number of people, within and without the PSA. I found that a great many individuals consider this publication a responsibility of the Society. They think an organization which undertakes to serve all of photography in the Americas must provide means for publishing technical and scientific papers as well as papers dealing with the art of photography.

In general, the performance of Photographic Science and Technique in its field of technical journalism has been satisfactory. This quarterly publication has been accepted by several photographic research laboratories as the proper organ for many of their research papers. It has found its place in research libraries and has attracted to the Society the attention of engineering organizations and educational institutions. Many of the latter had not previously considered the PSA as a publisher for photographic engineering and technical papers.

However, the Photographic Society of America, serving all interests in photography, includes some members who have very little concern with photographic science and technology. I have been told that some members are not interested in PS&T and would be content if it was not mailed to them.

Perhaps money can be saved by dividing the mailing list and sending future issues of Photographic Science and Technique only to those who are interested in its contents. We wish to determine if the savings on copies would be greater than the added expense of separate mailings

If you are interested in PS&T and wish to remain on the mailing list, will you please write to me. A penny postcard will be satisfactory, addressed to 30 East 60th Street, New York 22, N. Y. Your cooperation will be appreciated in helping us spend our PSA publication dollars where they will do the most good for photography in America.

NORRIS HARKNESS

#### THIRD 1951 ISSUE - VOLUME 17B, NUMBER THREE - PUBLISHED WITH THE PSA JOURNAL FOR SEPTEMBER 1951

### PHOTOGRAPHIC SCIENCE & TECHNIQUE

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## THE NEGATIVE APPROACH

HOTOGRAPHERS who have worked at the trade long enough to remember when color films with processing by the manufacturer included in the purchase price came on the market have all learned that the way to make a striking positive is to first produce a strong negative.

Before reversible films, processed by someone else, reduced photography from a disciplined art to a simple mechanical ABC of (a) focus, (b) aim, (c) shoot for the correct exposure; all photographers worthy of the name were adept with the negative.

Until the anticipation that hovers over the hypo tank or the print developing tray was replaced by an uneasy wait for the postman to deliver factory-processed color slides, photographers were all-around artisans-not collaborators teamed with monopack processing machines. Photographers in those days were conversant with negative

Perhaps the negative approach is the one best suited to gaining the attention and the interest of the accomplished photographer. Maybe we failed to get an idea across to our readers of the June 1950 issue because we used a positive instead of the negative approach.

Would-be authors and contributors continually inquire about the editorial policy of Photographic Science and Technique. What sort of papers do we want to publish?

In what subjects are we interested?

THE TIME SEEMS RIGHT for a restatement of editorial aims. There has been no significant change in policy since the first issue appeared in January 1950 but the photographic audience has grown as Photographic Science and Technique has reached an ever-widening circle of professional readers. Those who came in after the show started may wish to learn the announcement that preceded the performance. Here it is again but this time expressed

in the negative.

Photographic Science and Technique is not a publication of the Technical Division. The Technical Division assumes the responsibility, does the work, gives some financial support, but produces Photographic Science and Technique for the whole PHOTOGRAPHIC SOCIETY OF AMERICA and for the entire American audience of serious photographers. Technical photographic papers that originate in other divisions of the Society, in other societies or in no society belong and are welcome here. News and views of the Technical Division will not be found in the pages of Photographic Science and Technique but in other, more appropriate media.

This publication does not to any extent deal with photography at play but concentrates on photography at work. It pays scant attention to aesthetics but is deeply concerned about engineering. It is not edited primarily for the photographic hobbyist, the person to whom photography is a pastime or a means of expression. Photographic Science and Technique is written particularly for the "professional"

photographic worker and for the engineer and the scientist who has a serious interest in the photographic process as a means of livelihood or as an aid in his business or profession. It is not devoted to any specialized field of photographic practice or to any single science applied to the manufacture or use of photographic materials but looks on all things belonging to or associated with the touchstone

of photography—sensitivity to radiant energy.

Photographic Science and Technique is not concerned solely with theory, not wrapped up in the chemistry and physics of photography, not partial to mathematical exposition and analysis. It is concerned with both the "how" and the "why" of photography and aims to cover both science and technique, to deal with both theory and practice; but the practice must be on a professional level. The technique must be a real contribution to engineering knowledge. We aim to publish material according to the traditions and in the idioms of the separate sciences, to deal with engineering matters in a professional way, but to insist that the writing be unmistakably clear and understandable to all scientifically trained technical

Photographic Science and Technique does not have an editorial policy conforming all papers to a fixed pattern. It does not intend to edit manuscripts to enhance or maintain the "status" of the professional photographer. It is our aim to avoid the publication of misinformation, of errors, and of unscientific material. Each author may have the opportunity if he insists, however, to display, along with his learning and his accomplishments, his ignorance, his prejudices, and the quality of his thinking-our job being to insure that he makes his meaning clear.

The pages of Photographic Science and Technique are open to papers of professional calibre dealing objectively with the photographic process (sensitivity to radiant energy); the nature and manipulation of photosensitive materials, the devices, materials and methods useful to produce photographs or to perform engineering and scientific tasks by means of photography.

THE COVER PICTURE shows the completed Fairchild Camera Calibration Laboratory at Jamaica, L. I., New York. The calibrator, on its floating base, is completely isolated from the platform built around it. Two tables are also supported on unused ends of the isolation mount. At the one shown, the operator is reading resolution. The other table, hidden behind the platform and the Calibrator, holds the Fiducial Setter. The operator on the platform is testing a finished camera.

## A New Resolution Test Chart for Motion Picture Camera Lenses

ARMIN J. HILL\*

In answer to a demand from the motion picture studios for a simple, effective way of checking and comparing the resolution of photographic lenses, the Motion Picture Research Council has prepared a resolution test chart which combines many of the features now found in several separate test arrangements. Although this chart is designed primarily to give a qualitative check of such factors as center-to-corner sharpness, it can also be used to obtain fairly accurate quantitative measurements of lens resolution at several selected positions in the field of the lens. Considerable information can be gained quickly on the limitations of a lens, and what is even more important, an indication is given of the types of defects which underlie these limitations and their seriousness.

The chart is rectangular in shape, proportioned so that its image will just fill a standard 35mm camera aperture when the distance of the chart from the lens is 26 times the focal length of the lens. This is the working distance recommended by the National Bureau of Standards for their resolution test figures. It has the convenience of being approximately the same distance in inches as the focal length of the lens in millimeters. While this chart was designed specifically for use with 35mm cameras, it can be used for 16mm motion picture cameras and for most still cameras simply by changing the working distance so that the image of the chart will approximately fill the field of the lens. This will alter scale readings in a simple proportion, but the design of the chart is such that resolution limits can be determined for any reasonable size of field.

No attempt was made to include a grey scale. Determination of the dependence of resolution on contrast, it was felt, was quite separate from the purposes for which the chart was designed and would unduly complicate both the chart and the test procedure. Such an analysis, if de-

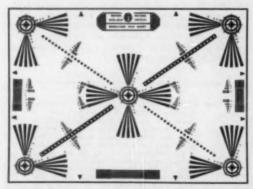


Fig. 1. Test chart proportioned to fit the American Standard camera aperture and sized to fill the frame when located a distance of 26 times the focal length of the lens used.

sirable, should be made as a separate test, using charts specially prepared for the purpose<sup>1</sup>. Therefore, the chart was printed with black ink on six ply commercial white card. This arrangement was found to give a satisfactory contrast, and the finish of the card gives no difficulty from glare when used with suitable lighting.

#### Construction of the Chart

A photograph of the chart is shown in Figure 1. Five focal figures are used, one at the center and one at each of the corners. These make possible a quick check of the center-to-corner sharpness or field curvature and can also be used to measure distortion. Diagonal lines carry a series of small circles, white against black along one diagonal and black against white along the other. These are used to show presence of coma, and also show distortion. They are also useful in the study of halation of the film. Wedges placed around each of the focal figures extend the range of the chart, assist in obtaining sharp focus at large distances, and make visual analysis of results much easier. Resolution scales along the wedges and scale values for each of the elements of the focus figures make it possible to determine resolution limits from any of these patterns.

Eight small triangles outline the margin of the standard aperture when the chart is used at the prescribed distance from the lens. Rectangular patterns along each edge assist in aligning the chart in the aperture and provide a visual check of motion picture camera steadiness.

Resolution test figures are also included at selected field points. These are placed in pairs so that two corresponding readings can always be obtained. Pairs are placed symmetrically opposite each other, so that resolution at one point can be compared with resolution at a corresponding point on the opposite side of the optical axis. This makes possible a check on the alignment and centering of the lens elements, These figures are placed at three different distances from the axis. Those near the center wedges are approximately one-third the distance from the center to a corner of the aperture, those along the diagonals are halfway, and those near the edges are three-quarters of the center-to-corner distance. For most lenses, the inner sets will be near the positions for maximum resolution, and the outer sets will be near positions for minimum resolution, while the mid-points will give an average value suitable for a comparative specification of the lens resolution.

#### The Focus Figures

One of the focus figures is shown in detail in Figure 2. This has been specially designed to facilitate the sharpest possible focus with the chart at any reasonable distance from the camera lens. Each element of the figure has also been proportioned to serve as a resolution test figure and scale values are provided with the directions which accom-

<sup>\*</sup> Motion Picture Research Council, Inc., Hollywood, California. Received 16 May, 1951.

pany each chart. The use of both circular and radial elements in the figure makes it possible to determine both the sagittal and tangential foci and therefore to observe the seriousness of astigmatic aberration.

Some element of the figure will be at or near the limit of resolution under practically any focusing situation. For example, at large working distances, the wedges or the points of the heavy "star" can be used. Usually, however, the center white circle will be visible. With better resolution the small black dot in the center of this circle can be seen. At the prescribed working distance, with a reasonably good lens, it should be possible to distinguish the cross lines in the white circle. With an excellent lens under the best possible conditions, the fine outer circles and triple radial lines can be resolved.



Fig. 2. One of the five focus figures which are located at the center and at the four corners of the chart.

#### The Resolution Test Patterns

Sixteen test patterns similar to the one shown in Figure 3, are arranged at selected positions on the chart. Each of these is drawn so that its outer edge follows a circular arc having the center of the chart at its center. Thus all the lines are either radial or tangential, and this makes possible a distinct differentiation between radial and tangential resolution. It will usually be found that there is at least one scale point difference between these two, although no good lens should have more than two points difference. The radial lines have slightly wedged shapes, facilitating better interpolation between adjacent scale values. The scale values, incidentally, apply only to the outer ends of these lines.

A three-line pattern is used throughout. As pointed out by Pestrecova, the NBS test figure with its varying number of lines, gave some trouble due to the difficulty of counting the number of resolved lines in each pattern element. The three-line pattern developed by the Department of the Air Force seemed to be much more satisfactory so it was adopted for this chart.

When the chart is at the prescribed distance from the lens, the scale values of the patterns will read directly in lines per millimeter. At any other distance, the number of lines per millimeter can be determined simply by multiplying the scale reading by the lens-chart distance in inches and dividing by the focal length of the lens in millimeters (or more accurately by 26 times the focal length in inches).

#### Use of the Chart

The chart is mounted for use on a flat backing so that it can be held perpendicular to the optical axis of the camera. The distance to the lens should be adjusted so that the image of the chart fills the image field of the lens, which for a standard aperture in a 35mm camera will be 26 times the focal length of the lens. Incidentally, this re-

Fig. 3. One of 16 test patterns distributed over the chart and centered at the chart center. The scale values apply only at outer ends of the radial lines.

lationship has been found to give a convenient way of measuring the focal length of a lens.

The amount of field curvature in the lens can be determined by noting the shift in position of focal plane between having the central focus figure and the corner figures in sharp focus. The seriousness of this defect as it may affect photographic results can be found by focusing sharply on the central figure and then noting the degradation in resolution of the corner figures.

A careful study of the resolution of a lens is best made by photographing the chart with it, and then studying the negative under a low-power microscope. Enlargement or projection will involve another lens system which may not be of as good quality as the one under test. The film should have a grain which is fine enough not to limit the resolution to values below the limit of the lens. Such limitation will be immediately apparent for the pattern will remain distinct while it "disappears" into the grain of the film. Microfilm is generally available and has been found to be satisfactory since its resolution exceeds that of most lenses of the type for which this chart was designed. Of course, an analysis of overall resolution of lens and emulsion may be desirable, in which case the specified emulsion will be used for the negative.

The best resolution for most lenses will be found at the inner resolution figures, which are approximately one-third of the distance from the center to the corner of the aperture. Likewise, the poorest resolution will usually be read from the outer figures which are approximately three-fourths of this distance. Four patterns are available at each of these distances so that all readings can be checked on several patterns. The figures along the diagonals will give readings which will probably not be the average of the maximum and minimum values but which nevertheless will serve as a good average value over the whole field.

A comparison of the readings on one side with corresponding readings on the other side of the optical axis will reveal any misalignment or mis-centering of the elements of the optical system. For a perfect lens these readings should check each other exactly, and in no case should they be off more than one scale point.

they be off more than one scale point.

Distortion can be determined by carefully measuring the diameter of the center and of the corner figures in the photographed image of the chart. If the corner figures are larger than the center, so-called "pincushion" distortion is present, whereas if they are smaller, the distortion is of the "barrel" type. Since most good lenses are carefully corrected for this defect, the amount of distortion found should be very small.

Coma will be apparent as an elongation of the small circles along the diagonal lines. In serious cases, these will assume a "tear-drop" appearance. For good lenses they should appear to be perfectly round and uniform in size. Because the white circles and the black ones are the same size on the chart, it is possible to study the effects of halation by comparing their size on the negative.\*

Spherical aberration can be studied using only the central focus figure, with its center accurately in the center of the field. Change in position of the focal plane as the lens aperture is opened from as fine as possible to full open position, will give a qualitative idea of the seriousness of this aberration. Careful measurements of it will require the use of special zone rings which allow light to pass successively through different zones of the lens. However extreme values can be measured by using a coin or other opaque disc in front of the lens of such size as to admit light only through the outer zone, and then measuring the shift in focal plane position from this condition to the one where light passes only through the center of the lens using the lens aperture stopped down as fine as possible.

Chromatic aberration can likewise be studied by use of the central focus figure. Colored filters are required and the shift in focal plane position between red and blue light is an indication of the longitudinal spherical aberration present in the lens.

The marginal points have been found to have several uses in connection with standard 35mm cameras. As already mentioned, they provide a quick method for determining the true focal length of a lens. They are useful in several of the lens tests by making it possible to center the chart image and chart along the optical axis of the lens. Also, they can be used to align a view finder by having the chart properly aligned in the finder and then photographing it through the lens.

This cannot be done visually because of the optical illusion but instead requires careful measurement or superimposition.—Ed.

#### Preparation of the Chart

Since this chart was to be used for routine checking and comparison rather than for precision testing of lenses, it was not necessary to go to the expense required for precision reproduction of the various test figures. However, it was felt desirable that quantitative results obtained with the chart should be accurate to within about two percent and this required some care in the preparation and reproduction of the figures. The diagonal lines, marginal triangles, and marginal rectangular figures were all drawn full scale. Focus figures and wedges were each drawn four times full scale and reduced photographically to the proper size. Resolution figures were drawn eight times normal size and likewise reduced photographically. Reduced figures were then mounted on the drawing and the full sized chart used to prepare a zinc etching.

The chart has already been used by the Research Council and by several major studios with very satisfactory results. Comparisons of lenses can be made simply and effectively with results from the chart apparently checking quite well with general photographic results indicating that the chart can be used successfully to predict lens "quality." Flaws in lenses are quickly revealed and even some "good" lenses have been shown to have serious defects. One studio is preparing a permanent photographic record of each of its lenses so that future damage or deterioration can be quickly checked. The fact that the chart provides a single uniform test available to all the studios is apparently also of value. When used for the purpose for which it was designed it appears to be superior to any other device which has been used previously, and it has already been shown to be versatile beyond the expectations of the designers.

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## Some Factors Affecting the Resolving Power of Ansco Color Films

#### KARL SCHADLICH®

#### ABSTRACT

The Sayce method of evaluating resolving power was used to study the resolution of Ansco Color films. It was found that the relative importance of the various effects was somewhat different than normally encountered with conventional black-and-white films. In a Ansco Color film the layer construction and the physical characteristics of the required emulsions constitute the major influences upon the resolving power. Because the emulsions are highly transparent, halation becomes a major factor. The emulsion turbidity is low, therefore it has relatively less effect. Within the range investigated, grain size was not a significant factor. The density and color differentials of the original subject were found to be particularly important. No significant effect was noted attributable to variations in processing. Consequently, the resultant resolving power is primarily determined by the effects which occur at the moment of exposure.

A STUDY has been made of the resolving power of Ansco Color films for the dual purpose of supplying additional information and to further improve the resolving power of Ansco Color films.

Development Department, Ansco, Binghamton, New York. Presented 21 October 1931 at the PSA Convention in Baltimore, Maryland. Received 16 January, 1951. In order to evaluate resolution critically it must be measured. The various methods of measuring resolving power can be classified as either optical or printing methods. The optical methods entail photographing a chart made up of lines in a grid formation varying in line width and spacing. The printing methods involve contact printing a similar chart or test transparency. In either case, the re-

sulting film is examined under high-power magnification to determine the finest grid lines which are distinguishable. The results are generally expressed in the maximum number of lines per millimeter resolved. For the evaluation of the complete photographic cycle the optical method is obviously required. When evaluating films, it is desirable to use the printing method and thereby eliminate focus variables and lens aberrations. For a discussion of resolving power evalu-

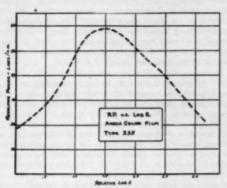


Fig 2. Resolving power versus exposure time data for type 235 Ansco Color film.

ation methods, see Mees "The Theory of the Photographic Process," Chapter XXI.

The method selected for this work was described by L. A. Sayce (Photographic Journal, Vol. 80, 1940, p. 454). Briefly, the chart was prepared by spacing points along a line in logarithmic progression. Perpendiculars were erected to these points and the spaces between 1 and 2, 3 and 4, 5 and 6, etc. were blackened. The resulting chart is reproduced in Figure 1. This chart was then photographically reduced on Reprolith film to a length of 3 mm. Following the mathematics described by Sayce, the number of times each of the lines would occur in one millimeter was determined. Twenty-one of these test copies were made and mounted behind a 21-step photographic wedge in order to obtain log E versus resolving power data. This platen was printed in contact with the test films in a modified

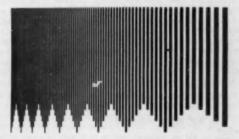


Fig. 1. An enlarged version of the Sayce resolving power test chart. The lines are spaced in a logarithmic progression. The serrated profile provides marker points.

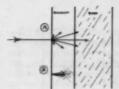


Fig. 3. Dispersion of light caused by the emulsion turbidity is shown in A. The result of this condition, after development, is shown in B.

contact printing frame. A sponge rubber backing and additional spring tension were provided to insure optimum contact. The exposing light was one inch in diameter and 30 inches from the exposure plane thus providing a working approximation to a point light source.

It was determined that the reproducibility of results was in the order of plus or minus four percent. Several samples were used in each test to increase the accuracy of testing. The values obtained were plotted in a graph such as is shown in Figure 2. The ordinate is scaled for resolving power in lines per millimeter and the abscissa values are relative log E according to the transmission of the 21-step wedge. This graph, which is quite typical, shows the effect of exposure. There is an optimum exposure to attain maximum resolution. More or less exposure will decrease the resolving power attained.

Obviously the testing method employed is concerned with only the film and does not consider lens effects such as accuracy of focus and lens aberrations. In actual practice the resolving power achieved by a lens and film combination generally follows this formula:

$$\frac{\text{R.P. lens} \times \text{R.P. film}}{\text{R.P. lens} + \text{R.P. film}} = \text{resulting R.P.}$$

Therefore the values attainable in an actual camera will be slightly lower than the values as presented to an extent depending upon the quality of the lens.

There are many factors that influence the resolving power of a film. One of the important factors is the emulsion type. The maximum resolving power values determined for some of the available Ansco Color films are:

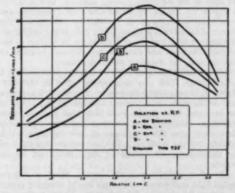


Fig. 4. The resolving power versus exposure time data of four films showing the effect of halation on resolving power. Curve A shows a film with no anti-halation protection; curves B, C, and D are the identical film but with progressively improved types of antihalation backings.

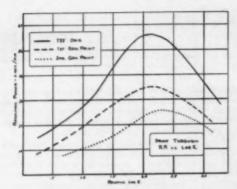


Fig. 5. The effect of resolving power losses due to contact printing. These resolving power versus exposure time curves represent the original film in solid line, the first generation print in broken line, and the second generation print in dotted line.

#### MAXIMUM RESOLVING POWER

Film Type	lines/mm	
Ansco Color Daylight-types 235 and 635	58	
Ansco Color Tungsten-types 234 and 634	55	
Ansco Color Camera Film-type 735*	56	
Ansco Plenacolor—type 437	50	
Ansco Color Printing Film-type 832*	56 50 52	
Ansco Color Duplicating Film-type 738*	55	
Ansco Color Printon-type 630	52	
Ansco Color Release Positive-type 848*	65	

The variation within this group is small in comparison to the variations within a group of black-and-white films of comparable usage. To a large extent, the resolving power is determined by the physical limitations pecular to a three-layer integral color film rather than by the characteristics of any one individual emulsion layer.

The emulsion layer is a turbid material which scatters the light as the emulsion is being exposed. This is shown in Figure 3A. Figure 3B shows how such a condition appears upon development. It is therefore obvious that the degree of turbidity is a major factor influencing resolution. The amount of dispersion of light varies in relation to the emulsion thickness and emulsion turbidity and as either or both increase, the resolving power decreases.

A black-and-white film tends to develop preferentially a surface image. This may decrease the effect of turbidity. However, in an integral three-layer color film the exposure and development must proceed through all the layers to the base and consequently such films tend to have lower resolution. However, it is also true that monopack color films must have thin emulsions of low turbidity which tends to improve resolution. This compensates for much of the disadvantage of developing the layers from top to

The effect of halation is well known. Much of this reflected light is dispersed and causes loss of resolving power because of the resulting diffused image. This is particularly true in emal-ions of high transparency such as are used in color films. To aid in overcoming this effect, various antihalation back coatings have been developed to absorb the

· Professional motion picture films.

light which has passed through the emulsion. Figure 4 shows the resolving power graphs of four antihalo back variations on an identical emulsion. The film without any backing treatment yields 43 lines per millimeter; production materials show improvement up to 66 lines per millimeter.

In Ansco Color films there is no wandering or bleeding of the image during processing because the color formers are nondiffusing. For this reason processing has little effect upon resolving power. A number of processing variations such as time of development, formula variations, solution temperature variations, etc. were tried. No significant effect upon resolving power was found when the variation from normal processing was within reason. The point of maximum resolution could be shifted along the log E axis but the maximum resolution remained the same.

Increasing the contrast can result in improved resolving power by making it easier to distinguish the alternate dark and light areas or lines but this is only true when the density differential is small. As the differential increases to normal operating range this effect rapidly becomes insignificant. What appears to be an improvement in resolution may be only apparent sharpness and does not indicate absolute resolving power. Two edges may be of equal resolution but the one of greater density differential will have greater apparent sharpness. A study of test object contrast and development contrast indicates that this effect depends primarily upon the density differential as reproduced and does not necessarily correlate with development contrast. In this respect, as development is increased, the effect of halation becomes more pronounced thereby actually reducing resolving power.

Grain size physically limits the maximum resolving power attainable. In the range up to about 75 lines per millimeter little effect was found. In order to obtain very high resolving power a fine-grain emulsion must be used though it does not necessarily follow that a fine-grain film has high resolving power.

The effect of color balance is particularly interesting. It was found that small variations had an insignifiant effect upon resolution but gross color balance differences did materially affect the resolving power of any given emulsion.

In this type of color film the total resolving power is an integration of the three-layer values. Usually the cyan bottom layer has the poorest resolution because the light reaching it is diffused by the upper layers. The magenta and yellow resolution is proportionally better. If an exposure is made wherein the cyan layer is seriously overexposed, the white lines will become cyan due to the blocking-in from excessive halation and dispersion. In such a case the black lines will be resolved primarily by the magenta and yellow layers. Consequently it is possible to obtain a higher value of resolving power even though the cyan resolution has decreased to an extremely low value. The resolving power in any instance is an average value integrated in relation to the layer density differentials. The following formula illustrates the effect:

$$(R.P. c) (Dc) + (R.P.m) (Dm) + (R.P.y) (Dy)$$
 $Dc + Dm + Dy$ 

- R.P. of the monopack

where:

R.P. is the resolving power of the indicated layer
and

D is the density differential of the indicated layer.

It follows that the resolving power of a color film de-

pends upon what colors are being resolved.

One of the factors involved in the resolving power of a color film is physiological. The eye has its highest brightness response in the yellow-green region and does not see as great blue density differentials as physically exist. Be-cause the resolution evaluation is visual, it can be assumed that the yellow layer resolution is slightly higher than measured. This factor is of consequence only in certain specialized applications such as in sound tracks and is less important in normal pictorial usage.

Print-through evaluations were studied. As might be expected, there is considerable loss on each duplication. Figure 5 shows the curve of a type 735 original with the curves of a duplicate print and a print from the first duplicate. On the first generation print there is a loss of 21 lines per millimeter and on the second generation print there is an additional loss of 10 lines per millimeter. These values were obtained by contact printing with near optimum

Some of the observations presented here may appear to be at variance with those made previously regarding blackand-white photography. In order to clarify any possible misunderstanding, the observations which are presented here apply specifically to Ansco Color films. It is believed that the importance of turbidity, halation, processing, grain size, etc., has been shown to be in somewhat different relation when applied to Ansco Color film than when applied to customary black-and-white emulsions.

#### Summary

The necessary layer construction and the physical characteristics of the required emulsions are the major influence on the resolving power of the Ansco Color films. The turbidity of the color emulsions is low and therefore this has less effect than in black-and-white films but because of the high transparency of the emulsions, halation is a major influence. The density and color differentials of the original object are particularly important. Grain size is of little consequence. Generally the resolving power is determined at the time of exposure by these characteristics.

The effect of reasonable processing variations is negligible.

The author would like to take this opportunity to thank

Mr. Malon Dickerson for his very capable assistance and Mr. Joseph Neschleba for his previous study which was

of great help in this work.

## The Developer Activity of N-Methyl-N-(b-Methylsulfonamidoethyl)-p-Aminophenol in Relation to the Charge Theory of the Induction Period\*

#### T. H. JAMES

#### SUMMARY

Development by N-methyl-N-(β-methylsulfonamidoethyl)-p-aminophenol shows a small induction period in the pH region, 9.2 - 11.1. At pH 11.9, the induction period is larger; and at 12.7, it is much larger. The rate of development in the early stages shows the unusual behavior that, after increasing with increasing pH over the range, 9 - 10.8, it passes through a maximum, and decreases rapidly with increasing pH above 11. If the film is pretreated with lauryl pyridinium p-toluenesulfonate before development, no induction period is observed at any pH and the rate of development increases with increasing pH over the entire range of 9.1 - 12.7. The temperature coefficient of development, in the absence of quaternary salt treatment, is 4.0 at pH 10.1 and 2.25 at pH 11.9. Development shows a marked positive salt effect at pH 12.7. The results can be explained on the basis of ionization of the NH portion of the methylsulfonamidoethyl group at high pH, with the consequent formation of a divalent ion. The photographic behavior of the compound gives a direct confirmation of the charge-barrier theory of the induction period.

HE EXISTENCE of an induction period in photographic development by some reducing agents has been attributed by the writer1 to an action of the charge barrier surrounding the silver halide grains. This negative charge, which stems from the predominance of halide ions in the surface layer of the grain, tends to repel negatively charged developer ions and impede their adsorption by the silver halide. The effect will be greater, the larger the charge of the developer ion and of the silver halide surface. As the latent-image centers become enlarged during the early stages of development, the surface charge in the vicinity of the silver-silver halide interface is decreased, and the impediment to negatively charged developer ions reaching the interface becomes smaller. Thus, the effective concentration of the developer at the interface region increases

as development progresses, adsorption increases, and the development velocity increases.

The evidence for the foregoing explanation of the induction period was based upon two facts: (1) Certain agents, e.g., quaternary salts, which depressed the surface charge decreased or eliminated the induction period, and (2) among a group of developing agents, the induction period was relatively larger, the greater the charge of the de-veloper ion. In the previous work, comparison could be made only of agents which differed both chemically and in their ionic charge. A developing agent has now been studied which is active both as a monovalent ion and as a divalent ion, and the developing activity of the two species can be compared simply by working in two differ-ent pH ranges. Moreover, the second ionization is in a group where it should not greatly affect the active developing groups of the molecule.1 The compound is N-methyl-

Communication No. 1404 from the Kodak Research Laboratories. Received 9 May, 1951.

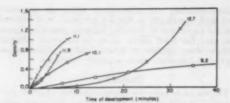


Fig. 1. Density-time of development curves for untreated film. Figures given on the curves represent pH values.

N—(β-methylsulfonamidoethyl)-p-aminophenol, and has the structure shown.

The pK value for dissociation of the hydroxyl group is 10.13 at 20 C; that for dissociation of the NH portion of the methylsulfonamidoethyl group is 11.75. At pH 9 to 10, the developing agent should be active primarily in the form of the monovalent ion, with the OH group ionized, although the nonionized free base will be in considerable concentration and may show some activity. In this region, accordingly, we have to deal with, at most, a monovalent ion. Above a pH of 11, however, the divalent ion appears in significant concentrations, and at pH 12.7 the developing agent exists almost wholly as the divalent ion.

#### **Experimental Procedure**

The N-methyl-N-(\(\beta\)-methylsulfonamidoethyl)-\(p\)-aminophenol was prepared by R. Bent and A. Weissberger, of these Laboratories, as follows:

A mixture of 17.2 grams (0.1 mole) of N-methyl-p-aminophenol-hemisulfate (Kodak Elon Developing Agent), 20.2 grams (0.1 mole) of β-methylsulfonamidoethyl bromide,<sup>2</sup> 17.4 grams (0.207 mole) of sodium bicarbonate, 130 milliliters of water, and 120 milliliters of 95

Table I

EFFECT OF PH AND QUATERNARY SALT ON DEVELOPMENT .

Developing Agent, 0.0025 M; KBr, 0.0033 M; Temp. 20.2 C N-Methyl-N-(β-Methylsulfonamidoethyl)-p-Aminophenol

pH	1/1	1/t(Q-salt)	Ratio
9.2	0.14	0.26	1.8
10.1	.83	1.11	1.3
11.1	1.33	2.50	1.9
11.9	.52	3.57	6.8
12.7	.071	4.0	56.0
	Kodak Elon	Developing Agent	
9.2	0.5	1.8	3.6
11.1	4.0	10.0	3.6
12.2	4.0	9.6	2.4
12.9	4.4	10.0	2.3

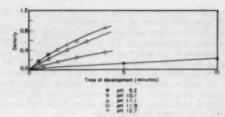


Fig. 2. Density-time of development curves for film prebathed in lauryl pyridinium p-toluenesulfonate.

percent ethanol was refluxed for four hours. The alcohol and water were then removed by distillation under reduced pressure on a steam-bath. The organic material was taken up in absolute alcohol (very soluble), and the alcohol evaporated. The thick, tarry-looking material was dissolved in hot water (part did not dissolve and was discarded), and the solution chilled with stirring a light-brown crystalline solid precipitating out, contaminated with specks of tarry material. The latter was removed manually as far as possible, and the crystalline solid was

#### Table II

TEMPERATURE COEFFICIENT OF DEVELOPMENT BY N-METHYL-N-(β-METHYLSULFONAMIDOETHY!,)β-AMINOPHENOL

Temp.	pH 10.1	T.C.	pH 11.9	T.C.
9.0 20.2	0.091	4.0	0.145	2.25

taken up again in 300 cubic centimeters of hot water, treated with Darco, and allowed to cool to room temperature before being chilled. The brown crystals, 9.44 grams (38.5 percent), melted at 112 - 114 C. Anal. Calculated for C<sub>10</sub>H<sub>1e</sub>N<sub>2</sub>SO<sub>2</sub>: C, 49.1; H, 6.55; N, 11.48. Found: C, 49.4; H, 6.7; N, 11.4.

The pK values were determined by titration by R. Gledhill, of these Laboratories. The development tests were carried out with solutions prepared and used in the absence of air. Nitrogen was used for agitation. The general procedure followed has been described in detail elsewhere. The developing-agent concentration was 0.0025 M and the potassium bromide concentration was 0.0033 M. Carbonate, borate, and phosphate buffers and potassium hydroxide were used to obtain the desired pH values. The photographic material used was a commercial motion-picture positive film.

#### **Experimental Results**

Figure 1 gives a plot of optical density against time of development for the exposure step,  $\log E = 1.75$ , and various pH values. The change in the shape of the curve as pH increases is striking. At pH 9.2, 10.1, and 11.1, the curves show only a slight induction period. At pH 11.9, the induction period is considerably larger; and at pH 12.7, it is much larger still.

Figure 2 shows the results obtained when the film was pretreated for 45 minutes in a 0.2 percent solution of the quaternary salt, lauryl pyridinium p-toluenesulfonate, and then developed. There is no induction period at any pH, and the rate of development progressively increases with

increasing pH.

Figure 3 further illustrates the unusual behavior of this developing agent with change of pH. In this figure, the development rate expressed as 1/1, where 1 is the time required to give a density of 0.2 above fog, is plotted against the pH. The solid curve shows the results obtained when the film is developed directly without the quaternary salt treatment. The rate of development at first increases with pH in the normal fashion, but it reaches a maximum at a pH of around 11 and subsequently decreases with increasing pH. At pH 12.7, the rate is only about one-twentieth of the maximum value. The film which has been pretreated with the quaternary salt does not show this behavior (see broken line in the figure). The data contained in Figure 3 are compared in Table I with the corresponding data for Elon (N-methyl-p-aminophenol). Elon shows no reversal as pH increases. Moreover, the relative effect of the quaternary salt upon development by Elon is roughly independent of pH, whereas the effect of the quaternary salt upon development by N-methyl-N-(Bmethylsulfonamidoethyl)-p-aminophenol increases markedly with increasing pH above 11.0.

The temperature coefficient of development by N-methyl-N-(β-methylsulfonamidoethyl)-p-aminophenol was determined at pH 10.1 and 11.9. The data are given in Table II. The coefficient in the induction-period region is 4.0 at pH

10.1 and 2.25 at pH 11.9.

#### Table III

#### NEUTRAL SALT EFFECT

Basic Solution: Developing Agent, 0.0025 M; KBr, 0.0033 M

KOH 0.067 M; Temp. 20.2 C

KNO<sub>8</sub> 1/*i*None 0.050
1.0 *M* .192

The effect of neutral salt upon the rate of development at pH 12.7 is illustrated by the data in Table III. An increase of about 3.5-fold in development rate was obtained when the solution was made 1.0 M with respect to potassium nitrate. Unlike the effect of the quaternary salt which is exerted primarily in the induction-period region, the relative effect of the neutral salt is substantially the same throughout the entire course of development, and the relative induction period remains unchanged.

The increase in the induction period and the decrease in reaction rate in the induction-period region, as the developing agent passes from the monovalent to the divalent ion stage, are in complete accord with expectations based on the charge theory previously outlined.<sup>3</sup> The decrease in development rate observed, as the pH increases from about 11 to 12.7, is of the same order of magnitude as predicted by the theory. If, for example, the charge barrier amounts to 0.1 volt, a monovalent ion must possess a kinetic energy of 1.6 × 10-13 erg to overcome this barrier, and a divalent ion must possess a kinetic energy of 3.2 × 10-13, whereas the average kinetic energy at 20 C of the ions will be only 6 × 10-14 erg. Accordingly,

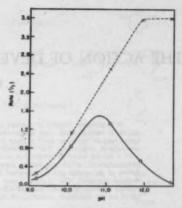


Fig. 3 Rate of development as a function of pH for untreated film (solid line), and for film pretreated in lauryl pyridinium p-toluenesulfonate (broken line).

$$\frac{e^{-16/6}}{e^{-32/6}} = 18.3$$

times as many monovalent ions as divalent ions will possess the required energy for equal ion concentrations. If the chemical activity of the two ions is equal, the solution containing substantially monovalent ions (pH 10.9) should act as though it were about 18 times the concentration of the solution containing substantially only divalent ions (pH 12.7), insofar as developer activity is concerned. (The direct effect of charge on adsorption of the ion is ignored in this simplified treatment.) The gelatin charge effect will act to increase further the difference in activities of the two solutions.

The influence of the quaternary salt and that of potassium nitrate are in complete accord with expectations on

the basis of the charge theory.

A quantitative prediction of the change in the temperature coefficient with pH cannot be made on the basis of present knowledge, but the observed dependence of the temperature coefficient upon pH is in the expected direction. At a pH of 10.1, an increase in temperature should increase the reaction rate both by virtue of the normal activation energy effect and by the increase in ionization of the OH group. At pH 11.9, however, the activation energy effect should be the same, but the increased ionization of the NH group should tend to decrease the reaction rate. Accordingly, the temperature coefficient should be lower at the higher pH value, as is actually observed experimentally.

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#### THE ACTION OF DEVELOPERS AS TANNING AGENTS\*

#### R. B. PONTIUS

#### ABSTRACT

ABSTRACT

It is possible roughly to classify photographic developing agents according to their tanning action as strong, weak, and nontanning developers. Certain binary combinations of two developers may be made to yield a more vigorous tanning action than either developer alone under comparable conditions. The substances which can give tanning development when combined with a strong silver developer but weak tanning developer include tannic acid, gallic acid, and phloroglucinol, which are not in themselves silver developers under the same conditions. The action of pyrogallol can be improved by combination with other developing agents of high reduction potential. The tanning action of pyrogallol can also be reduced by combination with weaker developing agents such as Glycin or p-phenylenediamine. An explanation of this effect based on the reduction potentials of the developers is proposed.

EVERAL METHODS are known for producing photographically a gelatin relief image. One of the most generally useful of these methods is that of forming, in the region of exposed silver halide, a hardened gelatin image simultaneously with a silver image by the process of tanning development.

Pyrogallol was first used as a tanning developer in 1879 by Sir Joseph Swan.1 The earliest published investigations of the mechanism of tanning development appear to be those of A. Haddon and F. B. Grundy, who, in 1896, found a number of other developers, including hydro-quinone, which could tan gelatin. These workers showed that the tanning is due to the oxidation products of the developers and does not take place in acid media.

In 1906, A. and L. Lumière and A. Seyewetz<sup>3</sup> investigated the tanning action of a number of developers, including pyrogallol, hydroquinone, catechol, and several much weaker agents, both with and without silver development. They showed that plain gelatin can be tanned slowly by the oxidation products while rapid tanning takes place simultaneously with the silver development of a silver halide emulsion.4 It was also recognized that sulfite, which inhibits tanning and associated staining in the case of most tanning developers, cannot do so completely in the case of pyrogallol.

In recent times, numerous patents have been taken out on different aspects of the use of tanning developers for the production of reliefs for engraving and imbibition printing. Many of these technical aspects have been discussed by E. J. Wall<sup>5</sup> and by J. S. Friedman.<sup>6</sup> The oxidation of hydroquinone, catechol, and pyrogallol, and the reactions of these developers with sulfite, have also been discussed by C. E. K. Mees. 7

#### Classification of Tanning Developers

At the present time, a large number of developers are known which, in alkaline solution, will produce tanning in a greater or lesser degree during silver development. In order to show the effect of structure upon the tanning

\*Communication No. 1393 from the Kodak Research Laboratories. Received 15 March, 1951.

action, it is desirable to classify developers into different groups according to the degree of relief produced under comparable conditions. By "degree of relief" is meant the ratio of gelatin retained after the unhardened portions have been washed away with hot water to the amount of silver developed, irrespective of whether or not the relief image has the length of scale, absence of fog, and fineness of grain necessary for good photographic reproduction. In compiling the following classification, use has been made of both published and unpublished data.\*

Table I

RELATIVE "SENSITOMETRIC SPEEDS" OF TANNING DEVELOPER COMBINATIONS AT pH 10.85. ELON COMBINED WITH OTHER AGENTS.

Au 1.74	xiliary Agent × 10 <sup>-2</sup> Molar	Tanning Agent 2.38 × 10 <sup>-1</sup> Molar	"Sensitometric Speed"
	Elon	Pyrogallol	10.5
	Elon	Tannic acid	6.2
	Elon	Hydroquinone	4.8
	None	Pyrogallol *	4.8
	Elon	Catechol	4.8 4.7
	Elon	Gallic acid	3.6
	Elon	Phloroglucinol	3.2
	Elon	Phloroglucid	2.0
	Elon * ·	None	1.0
	Elon	Resorcinol	0.8
	*Conce	entration, 4.12 × 10 <sup>-0</sup> m	olar.

The strong tanning developers are pyrogallol, catechol, and hydroquinone. These are characterized by the possession

<sup>\*</sup> For much of the latter, the author is indebted to some unpublished work of L. M. Condax, of the Kodak Research Laboratories.

of at least two functional hydroxy groups. Some derivatives of these developers probably can be added to this list, for example, chlorhydroquinone, bromhydroquinone, chlorca-techol, aminopyrogallol, and aminocatechol. Other obvious modifications could be added. Gallic acid with three hydroxy groups and protocatechuic acid with two cannot be included, as they are not even ordinary developing agents. 8,8

In the second group of developers are found those of weak and generally inferior tanning action, characterized principally by the possession of a single hydroxy group. Common representatives of this group are 2,4-diaminophenol (Amidol), N-methyl-p-aminophenol (Metol), and p-aminophenol. Other similar compounds, such as N-methylo-aminophenol (Ortol), 1-amino-2-hydroxynaphthalene-6sulfonic acid (Eikonogen), and o-aminophenol could be

added. Ascorbic acid is a weak tanning developer with two hydroxy groups on a heterocyclic ring.

The third group of developers contains those which are effectively nontanning developers. Examples are Glycin, p-phenylenediamine, and most color developers.

An examination of the structures of the developers in the three different categories suggests that two factors are necessary for tanning development, (1) the presence of one or more functional hydroxy groups, and (2) the pos-session by the developer of a reasonably good photographic reduction potential. In general, the developers which yield a quinone or quinoneimine upon oxidation may be tanning developers.

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Fig. 1. Structure of substances which give tanning in mbination with Metol.

### Combinations of Developers and Tanning Agents

The possibility of increasing the effectiveness of tanning by the combination of a developer with a substance which is a tanning agent (and which also may be a developer) has been known for some time.

In 1900, H. Lüppo-Cramer<sup>10</sup> obtained a useful developer with gallic acid in combination with Metol and described a slight brown stain in the image, but failed to recognize this as evidence of tanning. Combinations of pyrogallol with Metol were used at least as early as 1920 and are described as improved tanning developers.<sup>11</sup> A. Marriage,\* of the Kodak Limited Research Laboratory, Harrow, found that a mixture of Elon† with resorcinol or with gallic acid could be used as a tanning developer. L. M. Condax,; and R. Speck,\* of these Laboratories, found an Elon-pyrogallol developer superior in tanning action to either component

Unpublished work.
 † Trade name of N-methyl-p-aminophenol sulfate, sold by the Eastman Kodak Company.

‡French Patent 939,226 (1948).

#### New Tests of Combined Developers

In order to investigate the superadditive effect of combinations of developers on tanning, it was thought worthwhile to obtain a quantitative measure of the tanning produced under controlled and comparable conditions. The method adopted was to vary the substance used as one of the two principal components of a basic developer, maintaining constant the concentration of all components of the solution, the pH, and the processing conditions.

The basic developer formula utilized consisted of tanning agent (example - pyrogallol) 2.38 × 10<sup>-2</sup> molar, auxiliary developing agent (example - Elon) 1.74 × 10<sup>-2</sup> molar, preservative (ascorbic acid) 5.7 × 10<sup>-3</sup> molar, restrainer (potassium bromide) 8.4 × 10<sup>-3</sup> molar, antifoggant (5-methyl benzotriazole) 3.75 × 10<sup>-4</sup> molar and potassium carbonate to pH 10.85.

The sensitized material used for these tests was an unhardened emulsion coating containing black pigment similar to the film sold commercially for use with the Kodak Pan Matrix Process.

#### **Experimental Method**

Processing was carried out in a semiautomatic machine using nitrogen, partially to exclude oxygen and to supplement the mechanical agitation. Samples were exposed through the back, and after 2 minutes' development, followed by 1 minute in a nonhardening fixing bath (F-24),\* they were washed off for 1 minute in 120 F hot water. The silver was removed in a ferricyanide-hypo bleach, and, after washing and drying, the density of the pigment in each sensitometric step of the relief was measured with a densitometer. The density measurements were made with a red filter in order to minimize the contribution due to the residual brown developer stain. The pigment density was taken as proportional to the thickness of relief and was plotted against the logarithm of the exposure. The curves obtained in this way resemble the ordinary H and D curves obtained by plotting the silver density against the logarithm of the exposure. In order to obtain a quantitative measure of the effectiveness of tanning in the present work, the intersection of the straight-line portion of the pigment-density logarithm of exposure curve with the fog level has been chosen as a measure of the sensitometric speed of the relief image. In general, in a pigment-loaded emulsion, the contrast is determined mainly by the light absorption and is reasonably independent of development, a greater or lesser degree of tanning development serving principally to increase or decrease the apparent sensitometric speed of the relief.

#### Table II

#### RELIEF "SPEEDS" PRODUCED BY DEVELOPERS COMBINED WITH PYROGALLOL

			"Sensiton	netric Speeds"	
Auxiliary Agent	Tanning Agent	2 Min pH 10.55	pH 10.83	pment pH 11.15	6 Minutes' Development pH 10.85
Elon	Pyrogallol	5.1	10.5	(0)	41 *
Amidol	Pyrogallol	5.1	8.7	(*)	
p-Aminophenol	Pyrogallol	2.7	5.1	10.7 *	25.1 *
None	Pyrogallol †	1.0	4.8	12.0 *	15.8 *
Hydroguinone	Pyrogallol	0.6	3.3	8.7	17.4 *
Glycin	Pyrogallol	0.3	2.1	6.3	8.7
4-Amino-3-methyl- diethylaniline	Pyrogaliol	0.1	0.7	6.0	12.6

<sup>\*</sup> Excessive fog.

#### Comparison of Tanning Agents in a Two-Component Developer

In the first part of the study, various tanning agents were substituted for pyrogallol in the basic formula, always at the same molar concentration. It was noted at the start that Elon and ascorbic acid without pyrogallol produce a relief image of reasonable speed. Since ascorbic acid has been used throughout as a preservative, the speed of this particular combination was taken as unity and the other combinations were characterized by a speed given numerically by the number of times less exposure which would have been required to match the speed of the basic Elon-ascorbic acid developer. The results of this comparison are shown in Table I. The structures of these tanning agents are shown in Figure 1, in the order of decreasing tanning effectiveness. In this list there are at least three substances, tannic acid, gallic acid, and phloroglucinol, which are not regular photographic developers, that are capable of yielding tanning development.

Pyrogallol and tannic acid have three functional hydroxy groups. Tannic acid is more effective than gallic acid. This difference may possibly be explained by the observation of B. Homolka<sup>6</sup> that esters of gallic acid do not mask the action of the 4-hydroxyl group as does the carboxyl in the 1-position. The third and fourth substances, hydroquinone and catechol, have two functional para or ortho hydroxy groups. The remainder (except ascorbic acid) have the hydroxy groups meta to each other, a characteristic of aromatic polyhydroxy nondevelopers.

Amidol, in combination with pyrogallol, is an effective tanning agent, but in combination with Elon, tanning was completely prevented at all values of pH from 10.8 to over 13, although considerable silver development occurred.

#### Comparison of Auxiliary Developing Agents

In the preceding tests, it was found that Elon, while a poor tanning agent by itself, is able in combination with a number of other substances to promote a strong tanning development. For example, the Elon-pyrogallol developer gave considerably greater speed than the equivalent pure pyrogallol developer.

<sup>•</sup> For the composition of this bath, see "Elementary Photographic Chemistre" Eastman Kodak Company, Rochester, 1936, page 74.

<sup>†</sup> Concentration equal to that of both auxiliary and tanning agent.

The ouestion arises as to the reason why Elon is capable of promoting tanning development. In an attempt to answer this, developer formulations were compared by the same procedure as before, except that this time the tanning agent (pyrogallol) was held constant, and the auxiliary agent was varied. All other conditions, of course, were maintained constant in the basic developer formula, The results of this comparison are shown in Table II. Inasmuch as some developers act more slowly than others, comparisons also were made at a longer development time and at additional values of pH.

An examination of the data in Table II shows that, on the whole, the order of the "speeds" of the relief images is in agreement with the photographic activity of the auxiliary developing agents. It even seems as if the relative positions of the auxiliary agents may be the order of their electrochemical reduction potentials.

The question of the exact values of electrochemical reduction potentials of developers is a difficult one and data on this are not extensive. According to R. M. Evans and W. T. Hanson,18 the developers listed in order of decreasing reduction potential are Amidol, Metol, pyrogallol, p-aminophenol, and hydroquinone. D. B. Julian and W. R. Ruby<sup>13</sup> have obtained polarographic measurements of the half-wave potentials of three of these developers by a method employing the stationary platinum electrode. Their values\* for Elon, p-aminophenol, and 4-amino-3-methyldiethylaniline at pH 10.0 are: 0.133, 0.082, and 0.016, respectively, and at pH 11.0: 0.158, 0.134, and 0.060, respectively. The data available, therefore, are not in disagreement with the view that the "speeds" given in Table II are approximately proportional to the relative reduction potentials of the auxiliary developing agents employed.

An important point requiring explanation is why the inherent speed of the relief produced by pyrogallol alone is reduced by auxiliary agents, such as hydroquinone or Glycin, lying below pyrogallol in Table II. In order to explain this, it may be proposed tentatively that Elon, Amidol, and p-aminophenol are more readily oxidized by silver bromide than pyrogallol, and their oxidation products promote the oxidation of pyrogallol. On the other hand, pyrogallol is more readily oxidized by silver bromide than are developers like hydroquinone, Glycin, or p-phenylene-diamine or its derivatives. In this case, some of the oxidized pyrogallol is consumed in oxidizing the weaker auxiliary agent and consequently is not available for tanning. It is worth noting that G. I. P. Levenson<sup>14</sup> has proposed the oxidation of hydroquinone by p-methylquinoneimine to account for some of the superadditive effects shown by M-Q developers.

A similar action may occur in the cases where an almost nontanning developer, such as Elon, produces tanning through the influence of its reaction products upon a subsidiary tanning agent in the solution, even though the latter may not by itself be oxidized by the silver halide under the same conditions.

The tanning agent, like the developer, probably forms a semiquinone as an intermediate state in its oxidation;36 the semiquinones of the developer and tanning agent might then interact. The totally oxidized state of the tanning agent or its semiquinone, by combination with the gelatin, would cause a displacement of the equilibrium, thereby permitting the tanning reaction to continue.

#### Conclusion

The developers which by themselves are good tanning agents appear to be the good silver developers which possess two or more hydroxy groups. Upon oxidation, the developer yields quinonoid bodies which are the effective tanning agents. The mechanism of the tanning reaction, that is, the reaction between the developer oxidation products and the polypeptide chains of the gelatin, is at present incompletely understood.

It appears that a nontanning silver developer of high reduction potential also can produce tanning through the influence of its oxidation products upon a subsidiary tanning agent in the solution, even though the latter may not be a developing agent. By this means, a substance like gallic acid, for example, which by itself is not directly oxidizable by the silver halide, may become oxidized and thereby participate in the tanning reaction.

#### Acknowledgment

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## THE FAIRCHILD PRECISION

## CAMERA CALIBRATION

CLARICE L. NORTON®

LATE IN THE YEAR 1949 a group of men prominent in the field of aerial photogrammetry met at the Fairchild Camera and Instrument plant in Jamaica, Long Island, to discuss the problem of establishing a commercial laboratory for the calibration of precision aerial cameras. Today that laboratory is a reality, embodying the ideas and experience of the men who attended that meeting and the engineering staff of the world's largest manufacturer of aerial cameras. The combined contributions of these men, (Dr. Francis E. Washer of the National Bureau of Standards, Dr. L. E. Howlett of the National Research Council (Canada), Mr. Eldon Sewell of the U. S. Army Corps of Engineers, Mr. Paul Pryor, Department of the Air Force, and Dr. Constantin Pestrecov, Scientific Bureau, Bausch and Lomb Optical Co.) added to those of the Fairchild staff, headed by Irving Doyle and Revere Sanders, led to the installation of unusual and remarkably versatile equipment for the calibration laboratory.

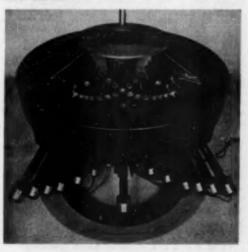
The Photogrammetric Camera

The aerial photogrammetric camera is a precision instrument requiring, in addition to the finest mechanical workmanship during construction, 100% performance testing and time-consuming calibration. Tests are conducted at various stages of manufacture and must of necessity dovetail into the dependent manufacturing processes. Essentially there are three stages at which testing is required.

Stage 1. The first test is the starting point for the machining of the individual cone to the characteristics of the individual lens. This is a photographic resolution and distortion test of the lens. It proves the adequacy of the lens for the application and establishes the position of optimum focus—the flange focal distance. This latter information is sent to the machine shop where 28 separate and distinct operations take place before the inner cone is received at the Calibration Laboratory as a sub-assembly unit for calibration.

Stage 2. The second test is a resolution and distortion test of the lens and cone assembly and leads to the calibration of the cone. This second photographic test records, in addition to the images of the resolution targets, the focal plane fiducial marks which are used to indicate the position of the principal point or the point of symmetry (depending on camera contract specifications). The plate from this test is analyzed using the Mann Comparator to measure the distances on the photographic plate and subjecting the data so obtained to mathematical analysis. The information should confirm the quality definition of the focal plane focus to which the cone has been machined. The fundamental information obtained from this test includes; the equivalent focal length, the calibrated focal length, the distortion curve asymmetric distortion characteristics, and the position of the principal point as referenced by the fiducial marks. Having located the principal point

Fig. 2. Partly assembled Calibrator, showing the symmetrical placement of collimators. The supporting "doughnut" is five feet in diameter.



PHOTOGRAPHIC SCIENCE AND TECHNIQUE

\* Director, Calibration Laboratory, Optical Technical Section, Fairchild Camera and Instrument Co., Jamaica 1, New York. Received 28 May, 1951.

## ABORATORY

Fig. 1. Operator leveling a lens cone by auto-collimation against an optical flat (not visible) in the focal plane of the inner cone. In this operation the focal plane is made perpendicular to the axis of the center collimator. Inset at the upper left is an enlarged reproduction of the reticle of the 45° target showing the cosine and cosine squared corrections necessary for off-axis collimators. The reticles were made by W. and L. E. Gurley Co.

it becomes a matter of technique to move the "fiducials" so that the lines drawn from opposite fiducial marks intersect at the selected principal point at right angles to one another. This is accomplished by means of a fixture called the Fiducial Setter. After the operation has been completed the whole calibration test is repeated to verify that the fiducial marks have been correctly relocated.

Aside from the calibration of the inner cone, it is becoming increasingly evident that the calibration test serves as the single, most unequivocal quality control point for evaluating everything from the design of the camera to the individual machining differences between cones. It is, for instance, impossible for any lens-cone assembly of inferior quality to pass these calibration tests. Any cone which falls below optimum expected performance at this point can be identified as to the mechanical conditions which contribute to the departure from excellence.

Stage 3. In the final test stage the performance of the completed camera is ascertained, using several magazines. This record is made on film. In addition to the usual definition tests and performance tests, the quality and geometric relation of the fiducial marks as they record on film is also determined. This precaution following previous, almost exhaustive, quality tests may seem a "gilding of the lily," but the Laboratory personnel consider it useful as a final, unconditional guarantee of the ability of the instrument to perform according to specifications.



These three specific stages constitute the fundamental photographic tests required for the photogrammetric cameras. What is not immediately obvious from consideration of the test procedures is the high degree of accuracy and precision required. Resolution conditions, for instance, must be such that the optimum position for the focal plane can be definitely selected (using a previously determined criterion) since only that position can give maximum photographic information.

Distortion measurements must be made in micron quantities. They depend on angular relations accurately known to specified seconds of arc.

Laboratories capable of such work are not common, but no great difficulty presents itself in duplicating precision laboratory equipment. At the Fairchild Laboratory, however, it was early recognized that urgency of delivery must be stressed, and that the utmost in accuracy would have to be attained while working on a production schedule.

At present there are four main pieces of equipment in the Calibration Laboratory: The Fiducial Setter; the Mann Comparator; a high quality binocular microscope; and the Precision Camera Calibrator.

There is nothing unusual about the microscope except that its mount has been so selected that the 10-1/2 inch square glass plates on which the calibration tests are recorded can be freely moved beneath the microscope.

The Fiducial Setter is what its name implies-a rigid,

fixture on which the fiducials can be directly observed under high magnification and by means of which, differential movements of the fiducial marks can be made.

The Mann Comparator at the Fairchild Laboratory has a stage with a 9-1/2 inch square opening. It features a micrometer screw with a 265 mm travel measuring in microns, and a rotary stage with the fixed 90° stop which makes it possible to use the screw to measure along perpendicular coordinates.

#### The Precision Camera Calibration

Of primary interest is the Precision Camera Calibrator. This huge, one-ton instrument is a modification of the original Precision Camera Calibrator designed by Dr. Francis E. Washer and Frank Case of the National Bureau of Standards.<sup>2</sup> It is mounted on a five ton base which isolates the calibrator to a natural frequency not exceeding 80 cycles per minute.

All of the photographic tests which lead to the certification of the metric constants of the photogrammetric cameras are based on resolution, symmetric and asymmetric distortion, and the physical position of certain reference marks. All of the tests are made on this Precision Camera Calibrator. The significant features which provide suitable test conditions are these:

- (a) The Calibrator is essentially composed of two perpendicular banks of collimators in a symmetrical arrangement. The lenses of these collimators are 25" f/14 first quality achromats matched in focal length, each collimator having been individually auto-collimated with white light.
- (b) The reticles of these collimators are corrected to rectify the inverse cosine and inverse cosine squared magnifications which affect the radial and tangential lines when collimators are used as off-axis targets. This allows direct reading of resolution without conversion tables—a time-saving factor.
- (c) The angles between the collimators of any one bank are known to a high degree of accuracy—presently, four seconds of arc. (It is expected that a new means of measuring may reduce this figure in the future.)
- (d) The entrance pupil of the Calibrator, that position where all the rays from all the collimators are available, is rigidly fixed so that for lenses up to 12" in focal length



Fig. 3. The vibration isolation base for the calibrator before the cement slab was poured. Three of the large vibro-isolators are just visible at the end of the base. The support was designed and built by Jayburn Engineering Co. of Long Island City, N. Y.

and 1.45" in diameter, an unbiased resolution test can be guaranteed. This condition is obtained by limiting to 1/16" the vertical travel of the leveling adaptor which holds and positions the cone being tested. The lateral positioning is secured by machining each cone to fit the three bosses and a locating pin on the leveling adaptor, the maximum lateral tolerance in positioning being of the order of .010 inch.

- (e) The auto-collimating telescope, used for leveling the cones under test, is of high optical quality. It employs a reticle which moves by spring opposed screws in two perpendicular directions, measuring to 1.14 seconds and easily readable to half that amount.
- (f) White, cold cathode fluorescent lamps, rated at 3500 K, are used to illuminate the reticle. These were selected rather than tungsten lamps because they develop light of a high intensity with minimum heat. The lamps are specially wound in a form, proven by many tests to be most efficient for the purpose. They are wired through Variacs so that each set of four lamps at the same angle, (for example all the 45's) is individually adjustable over a wide range of intensities, Kelvin temperature and spectral distribution remaining approximately constant.

The illumination of targets is balanced so that the density of the images of off-axis targets on an exposed photographic plate closely matches that of the center target image.

(g) The mechanical design of the Calibrator emphasizes rigidity, stability and balance. The 600 pound Mechanite ring is supported on three hardened steel balls contacting heavy leveling jacks. Suspended from the ring are the four main sectors which are connected together through a square mounting block which also serves as the housing for the center collimator.

All bearing parts were hand-scraped to a precise fit. No detail has been neglected by the builder, David Mann, which might conceivably introduce strain into the structure.

#### Lens Focusing Cone

In making lens tests where symmetric and asymmetric distortion measurements are important, the adapter which holds the lens must meet extremely critical requirements. This is accomplished by the Focusing Cone, a heavy Mechanite casting designed to test only the 6" Metrogon lenses. This is used in conjunction with the Calibrator.

Again, as with the inner cone, the lens is maintained by this adapter at the entrance pupil of the Calibrator. The method is the same. Three bosses and a pin limit the positioning. The distance between the lens under test and the focal plane must be varied, however, so that the focal range can be investigated. This is accomplished in such a way that successive focal plane positions are parallel to each other and to the rear flange seating surface of the lens within five seconds of arc. Parallelism between the front and rear seating surfaces of the lens is maintained to ten seconds of arc.

It is also possible to mount the front and rear elements to conform to the preferred orientation, as indicated by the lens manufacturer, for control of tangential distortion.<sup>3</sup>

The flange focal position—that dimension needed for machining the inner cone—is read or set directly by means of a dial indicator.

Each piece of laboratory equipment has been subjected to detailed photographic testing under a coordinated program with the National Bureau of Standards. The techniques and results have been such that the Bureau found

them acceptable for calibration.

New test apparatus will be added to the existing equipment as need dictates. It is expected that one device, a new means of testing film flatness, will become part of the standard equipment of the laboratory in the immediate future. When time allows, research programs relative to camera problems will be undertaken. Already the equipment has proven invaluable in supplying answers to several questions pertinent to camera design.

From the viewpoint of production efficiency and output, quality control and engineering knowledge, the installation cost of the calibration laboratory is being justified.

The author wishes to acknowledge the following: Mr.

Robert Draghi, Vice President in charge of manufacturing, whose foresight and guidance made this project possible. Mr. Robert Nelson, Chief Inspector, under whose immediate direction the program was coordinated. Mr. Edward Krietsch, Supervisor of Final Mechanical Inspection, who handled many of the important details of procurement.

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## A Method of Determining the Contrast of Photographic Paper

#### GEORGE EHRENFRIED®

#### ABSTRACT

A method is described for determining the contrast, as defined by L. A. Jones, associated with the characteristic curve of a sample of photographic paper. This method, which involves the measurement of a series of density differences, requires no special apparatus, takes two to three minutes to carry out, and gives results of satisfactory accuracy.

HE QUANTITY called contrast, as defined by L. A. Jones,<sup>1</sup> is useful in describing the properties of photographic papers and of processes which give direct positive paper prints from camera exposures. According to the definition, the contrast is the product of two factors. The first, called the extent factor of contrast, is the density range of the process. The second, called the rate factor of contrast, is the average slope of the characteristic curve, averaged vertically (with respect to density) and not horizontally (with respect to log exposure). Strictly speaking, the product of these factors is called "relative contrast" by Jones. To get what he calls "absolute contrast," the relative contrast is multiplied by 20,000, a constant derived from the brightness-discrimination properties of the human eye. In practice, relative contrast is more easily understood, because it is directly related to the parameters of the curve. For instance, a linear curve with no toe or shoulder, having a density range of 1.0 and a gamma of 1.0 would have a relative contrast of 1.0. The word "contrast" will be used from here on to mean "relative contrast."

The mathematical expression for the contrast is

$$C = \int_{\text{min}}^{\text{D max}} \frac{dD}{d \log E} dD \qquad \begin{array}{c} D = \text{density} \\ \log E = \log \text{ of exposure} \end{array}$$

Polaroid Corporation, Cambridge, Massachusetts. Received 5

which means that the contrast is equivalent to the area enclosed by the curve obtained when the slope of the H and D curve is plotted against its density (see Curve B, Figure 1). Another expression which, as pointed out by Jones, is equivalent to the above, is the following:

D=D max
$$C = \int \left(\frac{dD}{d \log E}\right)^2 d \log E \tag{2}$$

the meaning of which is shown in Curve D of Figure 1.

The use of contrast in practice is limited because it is not considered easy to determine its value from the characteristic curve. The determination was called by Bontenbal<sup>2</sup> 'too great an amount of work" and by the Urbachs<sup>3</sup> "an enormous amount of work." Two methods of saving time have been described. Morrison's method<sup>4</sup> uses a mechanical device incorporating a prism which helps in the slope measurement and a planimeter which performs the inte-gration of equation (1). The method of the Urbachs<sup>2</sup> uses an approximation formula which involves three slope determinations and some other measurements.

The method to be described here is based on equation (2). In principle, curve D is replaced by a stepped function and the area is obtained by adding the heights of the steps. The actual operation of the method, however, looks quite different from this. To save the labor of slope measurement, a procedure which involves the measurement of

Table I

#### CONTRAST DETERMINATION OF CURVE A IN FIG. 1 BY BOTH THE 0.1 UNIT PROCEDURE AND THE 0.2 UNIT PROCEDURE

0.1 Unit F	rocedure	0.2 Unit Procedure				
Density Differences	Squares	Density Differences	es Square			
1	1	4	16			
3	9	12	144			
5	25	20	400			
7	49	24	576			
9	25 49 81	20	400			
11	121	12	144			
12	144	4	16			
12	144		-			
11	121		1606			
9	81					
7	49					
. 5	25	Contrast = 16				
3	9	200	00			
1	1					

Contrast = .860

density differences is used. The curve is plotted on a graph paper on which the lines representing the tenths of log exposure units are emphasized. This is already a common practice. At each place where the curve crosses a heavy vertical line, the density is subtracted from the density where the curve crosses the next heavy vertical line. The differences are taken to the nearest .01 unit, and are written in a column. If it is desired to check for mistakes, they can be added and should total up to the density range. It is convenient to neglect decimal points in this tabulation, so that a difference of .08, for instance, is written down 8. Now each of these differences is squared and the squares are added up. A person who does this often soon memorizes the squares up to 30 or so and writes them down quickly. Finally, the sum of squares is divided by 1000 and the result is the contrast. On long-scale curves the work can be reduced by using fifths of a log E unit, instead of tenths, as the interval between which density differences are measured. In this case the sum of squares would be divided by 2000 instead of 1000 to arrive at the contrast value.

It has been found that when the contrasts of a considerable number of curves are measured in a group, the total time per curve is between 2 and 3 minutes (with the use of an adding machine). It is easy to imagine quite simple devices that could reduce the time below this, such as a subtracting device, reading directly in squared differences, that could be built onto a small drafting board.

It is desirable, of course, to have some idea of the amount of error caused by the integration of a stepped function rather than a smooth curve. For this purpose a group of imitation H and D curves which had mathematical equations were examined. In each case the contrast measured as described above was compared with the exact value computed by analytical integration. The error depends mainly on the number of differences used. If there are about seven differences in the column, the contrast figure

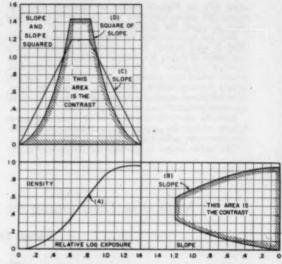


Fig. 1. Imitation characteristic curve and three slope functions, showing equivalence of the two integrals representing contrast.

- (A) Characteristic curve
- (B) Slope of (A) plotted against density
- (C) Slope of (A) plotted against log exposure
- (D) Square of slope of (A) plotted against log exposure

The areas contained within curves B and D are always equal to each other. (Curve A consists of a linear portion from Log E=.6 to Log E=.8 with a slope of 1.2, and two similar parabolic portions, with equations  $D = (\text{Log E}) \text{ and } D = .96 - (1.4 - \text{Log E})^{1}.)$ 

will be about 1.5% to 2.0% below the true value. If there are about 12 differences, the contrast figure will be about 0.5% below the true value. Examples of these errors are shown in Table 1, which also illustrates the contrast determination procedure itself.

Some workers have preferred to exclude, in their contrast computations, those portions of the toe and shoulder of the H and D curve of which the slope is less than 0.2. Jones states, however, on page 147 of Part D of his paper<sup>1</sup> that the contrast measured including or excluding these portions is substantially the same.

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### THE PHOTOGRAPHER IN INDUSTRY

JOHN W. McFARLANE AND GEORGE T. EATON®

PHOTOGRAPHY in industry can mean one or more of several types of photographic application. It can refer to the reproduction of engineering drawings; the use of spectrographs or electron micrographs in production control; the microfilming of valuable documents for permanent record purposes; the production of 16mm motion pictures for many purposes; the preparation and use of visual aids in training workers; the photographic duplication of orders, invoices, letters, and other business documents; the making of arresting photographs for publicity or advertising purposes; the use of conventional photographs in plants, shops, or research laboratories for graphic records; the seismograph recording of oil exploration data; and so on. These are only a few of the many applications of photography in industry.

Regardless of the phase under consideration, industrial photography is an expanding, indispensable tool at work in all types and sizes of industry. It can be divided into two broad types; promotional photography and "in-plant"

Promotional photography is typified by advertising illustrations, and pictures used for public relations or for industrial relations. These uses of photography are designed primarily to promote the sale of products, to increase or arouse the interest of the consumer in the products for sale. They demand the utmost in photographic and artistic skill.

"In-plant" photography, on the other hand, refers to the various uses of photographs within the industrial plant. It includes the uses of conventional photographic materials and products for plant photography, studio photography, field photography, motion pictures, slidefilms and film-strips, and time-and-motion studies. In this discussion, we are primarily concerned with the uses of conventional photography in industry. However, in-plant photography employs many specialized photographic products and processes. Among these processes are the reproduction of drawings, photocopying, recording, microfilming, photomicrography, spectroscopy, etc.

#### Why is Photography Used?

The effectiveness of photography is probably its greatest value in its many in-plant applications. Photography is valuable and essential if it can increase the rate of production, improve the quality, assist in the engineering of a product, or decrease the cost of an industrial article. It is also definitely worth while if it can help in the training of employees or in the improvement of production methods.

In-plant photography is also very valuable in the recording of experimental and research data (Figure 1) and in the presentation of information in written reports. In all of these cases and many others, a much more forceful pre-

sentation is usually possible when pictures are included. They tell the story much more quickly and effectively than dozens of words.

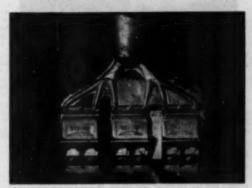


Fig. 1. Industrial Photograph Made for Record Purposes of a Defect Found During an Investigation of a Die Casting Operation.

Photography can also be used to sell an idea—perhaps a new idea on production methods to the engineering staff or to management. Pictures appended to reports will "put across" the idea much more effectively than the written word.

Photographic operations do cost money, but this should not be the chief consideration in arriving at a decision concerning their use. The effectiveness of the photograph is of prime importance and should receive first consideration. In many instances, however, the use of photography in the methods and operations of an industrial plant will effect savings in labor and material. The uses of in-plant photography are applicable to practically every department in the entire industrial organization.

#### What are Quality Requirements?

Service and effectiveness are probably the most important requirements of in-plant photography. The graphic presentation by means of photography is far more valuable than "a pretty picture." In these applications, dramatic quality is not required. It is far more important to get across an idea than it is to spend a lot of time and money making a technically perfect photograph. Service is probably the most important factor of all, since engineers, supervision, and management want to receive reports of certain experi-

<sup>&</sup>lt;sup>o</sup> Eastman Kodak Company, Sales Service Division, Rochester, New York. Received 5 July 1951.

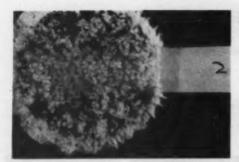


Fig. 2. Crystals in a Petri dish photographed for record purposes and to document a technical report.

mental work, production tests, etc., without delay and at an appropriate cost.

#### What are the Basic Requirements?

Before a completely satisfactory photographic record can be made, it is extremely important that the problem be thoroughly understood by the photographer and by the plant supervision he serves. It is not always possible to discuss all the intimate details concerning a problem, but it is certainly possible to make clear just what a photograph should illustrate. This kind of preparation is possible only when there is cooperation between the photographer and the engineer concerned. When the photographer understands the problem, he can best arrange his photography so that the required result is obtained. On the other hand, if the engineer assumes that the photographer can produce the result without understanding the problem, he may be wasting time and money for his company and failing to obtain the very important assistance that he needs.

#### Where Can Photographic Help be Obtained?

The term "in-plant" photography† implies that the photographs are generally used within an industrial plant. Such photography is, in many respects, similar to regular commercial photography. It is, therefore, possible for industry either to utilize the services of established professional photographers or to provide a photographic staff and equipment in a department within the organization.

#### The Commercial Photographer

There are five "musts" which the independent commercial photographer should observe in his relationships with an industrial concern and their photographic requirements. He must observe basic requirements. He must observe quality requirements. He must use the correct kind of photography. He must provide the service required by industry. He must keep prices to a minimum. This all means that the commercial photographer must be fully acquainted with the requirements of the industrial concern, and that he must be prepared to meet these requirements of industry.

#### The Industrial-Plant Photographer

How do industrial photographic laboratories get their start and how can they develop? A recognition of the potential value of photography within an organization or in some part of it may be the basic reason for starting a photographic department. Usually, these laboratories have their start experimentally in a small way and then develop in various ways. In the beginning, part-time outside service can be utilized, in which case a commercial photographer is called upon to do photographic jobs. Later, inside service requiring a full-time or part-time photographer may be required. In these cases, it is often the practice to assign to an amateur photographer within the plant the job of making some photographs for specific pur-poses. It is important in these cases that the photographer involved make an effort to provide the best possible photographic record for the particular job in hand. This requires that he study the problem thoroughly and set up his photographic procedure accordingly. If the photographer is successful in his efforts, he is likely to be given more and more photographic work to do-a circumstance which could eventually lead to a full-time photographic job. Eventually the photographer's efforts may lead to the organization of a photographic department, especially when his pictures and presentations prove the value of photography to supervision and management personnel.

Not all industrial photographic laboratories develop according to this pattern. In many cases, management is convinced at the outset that photography could be a valuable tool in certain phases of the plant operations. The result can be a slow development of a photographic laboratory or the immediate formation of a completely equipped photographic department with a competent photographer in charge. It is not unusual in other cases that photographic activity stems from an interest of management personnel in amateur photography, or from the need for photographic procedures in emergency situations, such as a national production crisis.

Regardless of the method by which such a department might develop and expand, the main impetus must come from the photographer in charge. It is important that he present his photographs in such a manner that the pictures sell themselves to the people concerned. In other words, if the pictures are acceptable and have done a very satisfactory job the first time, in all probability there will be less opposition to undertaking subsequent jobs. The success of the pictures themselves depends to a great extent upon the initiative, planning, and presentation by the photographer. At the same time, this initiative and good planning can advance the status of the photographer himself in relation to the organization in which he is employed. Much of the value and success of photographic operations within industry depend upon the interest generated by the photographer and acceptance of his work by the supervision and management. This is THE INDUSTRIAL PHO-TOGRAPHER'S OPPORTUNITY.

<sup>†</sup>The authors have prepared a second paper dealing specifically with typical in-plant photographic assignments that will appear in the next issue of Photographic Science and Technique. Illustrated with numerous photographs, this concluding paper gives advice and instruction for the photographer engaged in a variety of industrial assignments.

## GRADIENT METER FOR USE IN PHOTOGRAPHIC SENSITOMETRY

#### L. D. CLARK

#### ABSTRACT

The fractional-gradient criterion of negative film speed has been widely accepted and has been included in both American and British national photographic standards. This paper describes the construction and use of an improved meter for measuring the fractional-gradient speed from the D-log E curve of a negative material.

Fractional-gradient speed is computed from the point on the D-log E curve where the

gradient (G) equals three-tenths of the average gradient ( $\overline{G}$ ), measured over the 1.50 log E

gradient (G) equals three-tenths of the average gradient (G), measured over the 3.00 log E interval of which the point under consideration is the lower limit.

Gradient meter, Model C, described here, is an improved form of one devised by C. N. Nelson and described by C. Tuttle, and is made up of two pieces of transparent heavy-base film fastened together with a rivet so that one part will pivot about a carefully determined point in the other. A gradient scale is printed on one part of the meter, giving the slope, with respect to the base line, of a straight line passing through the point of rotation and through the scale. The other part of the meter lies underneath, next to the graph paper, and has on it a straight line to the straight line of the line of the meter lies underneath, next to the graph paper, and has on it a straight line passing through the point of rotation and a curve plotted so as to give the G=0.3G relationship between the slope of the straight line on the meter and the slope indicated at the point of intersection a; the curve on the meter with the scale on the meter. When the meter is placed in a properly aligned position on the D-log E curve so that the above-mentioned intersection falls on the intersection of the D-log E curve with the scale, in the manner described here, the desired fractional-gradient speed point will be indicated.

The meter, besides measuring the fractional-gradient speed of negative materials, can be used for measuring gamma, the average gradient over a given region of the curve, and gradient at a point. It can also be applied to locating the points on the D-log E curves of photographic papers necessary to the measurement of speed, log exposure scale, and average gradient, although a more specialized device is preferred for evaluating the gradient characteristics of photographic

HE fractional- gradient criterion of negative film speed has become well known to many workers in the field of photographic sensitometry. This criterion is specified in the American Standard for Determining Photographic Speed and Exposure Index,1 and in the corresponding British Standard.<sup>a</sup> In these standards it is applied to negative black-and-white roll films, film packs, miniature-camera films, sheet films, and plates of the type used in amateur and professional continuous-tone photography. This criterion was chosen because it enables one to determine from the density-log exposure curve of the negative material the minimum useful exposure for normal photographic work. Speed values are obtained which agree with practical speeds determined according to the following concept: Photographic speed refers to the minimum ex-posure which will yield a negative from which a print of excellent quality can be made. The experimental work underlying this concept and the fractional-gradient criterion have been fully described in the literature, 3,4,8,8,7

Methods and instruments for determining the speed from the D-log E curve of the negative material or from sensitometrically exposed strips of the material have been described by C. Tuttle.<sup>0</sup> The speed can be determined accurately from the strip by means of special gradient photometers, visual or photoelectric, and this avoids the necessity for drawing the D-log E curve of the material. However, in addition to the measurement of speed, some laboratories also wish to have the D-log E curve as a record of other characteristics of the material, such as length of toe, type of shoulder, gamma, etc. In these cases, it is common practice to determine speed by measurement of the frac-

tional gradient on the curve rather than from the sensitometric strip. In this operation, a fractional-gradient meter of the type devised by C. N. Nelson, and described by

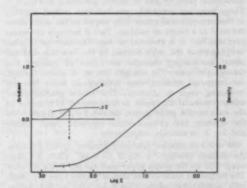


Fig. 1. Direct graphical method of locating the fractional-gradient speed point.

Tuttle,8 is often used. This meter consists of two, transparent, movable sheets of clear film on which have been printed the lines and numbers used in making the measurement. The purpose of the present paper is to describe the design and operation of an improved form of this type of meter and to show its application not only to film-speed determination, but also to the measurement of gradient of any portion or at any point on any plotted curve. This meter can also be used for the measurement of speed,

<sup>\*</sup> Communication No. 1408 from the Kodak Research Laboratories. Received 16 May, 1951.

average gradient, and log exposure scale from the D-log E curves of photographic papers, although it is not specifically designed for this purpose.

The speed of a negative material is computed by the

use of the formula:

Speed 
$$=\frac{1}{E}$$

where E is the exposure (expressed in meter-candle-seconds) corresponding to a point on the toe of the densitylog exposure curve where the gradient is three-tenths of the average gradient, G, measured over a log exposure interval of 1.50 of which E is the minimum exposure.

Thus, the point to be located is on the toe of the curve where the gradient, G, is equal to 0.3G;  $\overline{G}$  is the symbol

often used for average gradient.\*

Since the speed point depends on the equality of two separate variables, G and 0.3G, finding the point quickly and accurately becomes a problem. The direct method is to plot G and 0.3G against log E, as shown in Figure 1, and note where these curves intersect. This procedure is accurate but slow.

Various types of transparent meters to be used for measuring speed have been devised and tested in these Laboratories. The meter described in this paper, designated as Model C. has been adopted as the best for determining speed from the D-log E curve as well as for measuring gradients of curves in general.

#### Description of Meter

The meter is made photographically. It consists of two transparent parts, A and B, shown assembled in Figure 2. These parts are accurately punched and riveted together so that one part will rotate with respect to the other about the rivet as a center of rotation. Part B becomes the under part and Part A is mounted on top. The scale on A gives the tangent of the angle formed by the base line and any other line passing through the center of rotation and through the scale. The straight line on B passes through the center of rotation, thus forming an index line for measuring slope or gradient. This simple gradient-measuring feature of the meter is independent of the size of the scale on the graph paper, provided equal distances on the ordinate and abscissa scales represent equal density and log E increments, respectively.

In order to measure fractional-gradient speeds correctly, the distance marked " $\Delta \log E = 1.50$ " (Part A) must equal 1.50 on the graph paper used for the D-log E curve. The meters are made in two sizes at present: one for "halfinch" graph paper, where  $\triangle \log E = 1.50 = 3-\frac{3}{4}$  inches, and one for the special sensitometric graph paper used in these Laboratories, where  $\Delta \log E = 1.50 = 4$  inches.

Figure 2 illustrates the conditions fulfilled by the curved line, a, on Part B of the meter. The value at the point, E (Figure 2), where the straight line intersects the gradient

 $^{\circ}$  More recently the symbol  $\beta$  has been used to represent the average gradient over the 1.50 log E interval beginning at the speed point. Therefore, when the condition  $G = 0.3\overline{G}$  has been met,  $\tilde{G}$  becomes  $\beta$ , which is a constant for a given curve, and the equation becomes  $G=0.3\beta$ . The symbol  $\beta$  is used thus in the American and British standards for photographic speed determination.

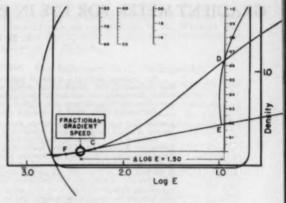


Fig. 3. The gradient meter in place on a D-log E curve at the gradient speed point.

scale, is always three-tenths of the gradient value at the point, D (Figure 2), where the curve, a, intersects the scale. This relationship does not apply to scales b, c, and d, which are not used in speed measurements but are intended for simple gradient measurements only.

#### Use of the Meter for Measuring Speed

Figure 3 shows the meter placed on a D-log E curve at the gradient speed point. The center of the circles, F and C, must lie on the D-log E curve. To make this a precise operation, small dots are used in the center of the circles, F and C. These dots do not reproduce readily in these illustrations, but are clearly visible in the meter itself. The upper half of the meter must be aligned with the graph paper so that the base line is parallel to the horizontal lines of the graph paper. At the same time, the D-log E curve must pass through the intersection, D, of the curved line on the B component of the meter with the gradient scale on the A component of the meter. When these conditions have been met, as in Figure 3, the arrow over the center of the rivet will indicate the log E of the speed point.

The procedure for finding the speed point is first to place the meter on the D-log E curve so that the fractionalgradient speed arrow is over the region of the curve where the speed point is likely to be found and so that the D-log E curve passes accurately through the dots in both circles, F and C (Figure 3). Then, holding the B component of the meter securely on the graph paper in this position, the A component of the meter is aligned with the graph paper by rotating it so that the base line is parallel to the horizontal line of the graph paper. If the intersection of the curved line, ED, with the scale on the meter is below the D-log E curve, the meter is moved to the right and the operation is repeated; if it is above, the meter is moved to the left and the operation is repeated.

The accuracy of the meter itself is high when thus used to measure speed. The errors that may arise if the D-log E curve is inaccurately determined or carelessly drawn are more serious. There is, therefore, a need for high-quality sensitometric strips and for care in drawing the curves.

Errors caused by inaccuracies in the curves can be overcome by testing a number of film samples and taking the average.

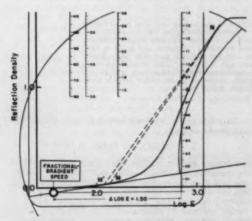
#### Discussion of Principles

It can be seen that, with the meter in the position shown in Figure 3, the conditions for the fractional-gradient speed point,  $G=0.3\overline{G}$ , have been met to a close approximation. Strict adherence to the conditions of the speed criterion require that line FE (Figure 3) be tangent to the D-log E curve at the center of rotation of the meter. Since this point is in the center of the rivet which holds the two parts of the meter together, fulfilling this condition is not feasible. Instead, the line cuts across a small segment of the D-log E curve between F and C (Figure 3), which represents a log exposure interval of 0.30. Fortunately, however, the shape of the toe of a D-log E curve is normally such that the chord, FC, will be so closely parallel to a line drawn tangent to the curve at the center of the specified log E interval that the difference can be neglected as a source of error. A very slight error in the evaluation of  $\overline{G}$  is introduced by designing the meter so that the center of rotation always is placed slightly above the D-log E curve (at the center of the chord, FC, Figure 3). The effect of this discrepancy on the speed rating is insignificant, however, although the error in G may amount to 0.01 or 0.02. If a precise measurement of  $\overline{G}$  or  $\beta$  is required, a separate measurement can be made as described in Item 2 of the following section.

#### Other Uses of the Meter

1. To measure the gamma of a D-log E curve, lay the straight line on Part B of the meter (Figure 2) along the straight-line portion of the D-log E curve and read the slope on the gradient scale. Note that the scale of the meter must be aligned with the graph paper in all cases. This use is not illustrated.

2. To measure the average gradient over a given region



4. Step 2 in the process of locating the limiting points on the D-log E curve of a photographic paper.

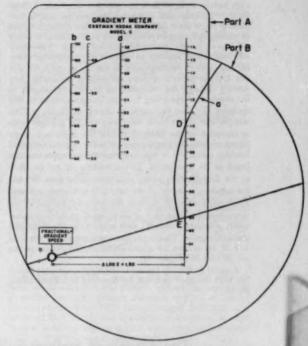


Fig. 2. The gradient meter assembled and showing condition fulfilled by curved line on the gradient meter.

of a curve, use the straight line on Part B of the meter as an index. Place the meter so that this line intersects the ends of the region of the curve for which the average gradient is desired. Again read the slope on the gradient scale. The slope of this chord equals the average gradient of the curve over this interval.

The gradient of a curve at a point may be determined by placing the straight line on Part B of the meter tangent to the curve at the given point and reading the slope of the line.

4. A special use of the meter is to locate on the D-log E curve of a photographic paper the limiting points defined by Jones and Nelson, and by the American Standard for Sensitometry of Photographic Papers. The portion of the D-log E curve of a photographic paper used in the making of first-choice prints was found by Jones and Nelson to be defined by two points. One of these points lies on the shoulder of the curve where the gradient is equal to  $\overline{G}$ . The other point lies on the toe where the gradient is equal to one-tenth  $\overline{G}$ ,  $\overline{G}$  being the average gradient over the log E interval defined by the two points.

Since  $\overline{G}$  is not measured over a fixed interval for papers as it is for film, the problem of making a simple automatic device is somewhat different for papers. By resorting to actual mechanical linkage of the proper ratio between the moving parts of the meter, a very satisfactory type of meter can be made. Morrison and Swift have each designed

such meters. Both of these meters have been described by Swift.13 Lacking such a device, the operator can, nevertheless, locate these limiting points on the D-log E curves of photographic papers with the aid of the Model C meter used as a simple gradient-measuring device. Experience will enable the operator to estimate approximately where the one-tenth  $\overline{G}$  limiting point on the toe of the curve will fall. Use the meter to measure the slope of the straight line passing through the estimated toe point and tangent to the shoulder of the D-log E curve. Using one-tenth of this tentative  $\overline{G}$ , place the meter as shown in Figure 4. The straight line of the meter must intersect the gradient scale at one-tenth of the tentative  $\overline{G}$  and the meter scale must be square with the graph paper. M is the original estimated limiting point. M' is the measured second approximation based on the tentative  $\overline{G}$ . To test whether M' can be taken as the final limiting point, remeasure  $\overline{G}$  between M' and the shoulder point, N. If the new  $\overline{G}$  is sufficiently different from the tentative  $\overline{G}$ , so that the point on the toe of the curve corresponding to a gradient equal to  $0.1\overline{G}$  is measurably displaced from M', then relocate the toe point and check  $\overline{G}$  again. This rarely becomes necessary, since M and M' are seldom far apart. Therefore, the desired points are M' and N (Figure 4).

A meter specifically for use in testing photographic papers has been designed and will be described in a forthcoming

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## The Activity of Sodium Sulfite in Fixing Baths and the Stability of Thiosulfuric Acid

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#### SUMMARY

The activity of sulfite is decisive for the stability of thiosulfuric acid ions in acid-fixing baths. The decomposition of thiosulfate will be different depending on the concentration of the added acid. Different amounts of sulfurous acid are released and enter hitherto unknown transformations with by-products of the decomposed thiosulfate. Sulfurous acid helps to form pentathionic acid which produces new thiosulfuric acid and trithionic acid. The latter decomposes to produce more thiosulfuric acid plus sulfuric acid. A kind of "chain reaction" produced through the activity of sulfurous acid ions explains the stability of thiosulfuric acid in acid solution. (This paper has been translated and greatly condensed by the author from a thesis published in 1924 by the Nobel Institute in Stockholm. Ed.).

HE NEED for sulfite in a fixing bath (hypo) is based on the following theory: By the reaction of sodium thiosulfate with the acid of the fixing bath, sulfur precipitates. But sulfite functions as a preservative and the decomposi-tion of hypo is stopped<sup>1</sup>. There is no scientific foundation given and nothing offered to explain the influence of the sulfite in preventing sulfur precipitation and the decomposition of hypo. A recent publication<sup>2</sup> describes the decomposition of thiosulfate in acid solution in the following

According to the commonly known formula, thiosulfuric acid breaks down

$$H_2S_2O_3 \rightarrow H_2SO_3 + S$$

and besides another reaction takes place which results in the formation of hydrogen sulfide and "probably" tetrathionic acid from the reaction between sulfur and trithionate,

II. 
$$2H_2S_2O_3 \rightarrow H_2S + H_2S_2O_6$$

When sulfite is added the precipitation of sulfur is prevented and no decomposition of hypo results. Experimen-

<sup>\*</sup> Curio Photo, New York 52, New York. Received 6 February 1951.

tation has shown, however, that there is no hydrogen sulfide evolved and trithionic acid is formed by a completely different reaction.

It is surely a surprising fact to the chemically instructed darkroom worker that sulfur precipitation rarely is observed and that fixing baths in spite of acidification are stable for a long time and do not lose their effectiveness after many weeks of use. On the contrary, everybody knows that sodium thiosulfate solution with a small addition of acid decomposes in a test tube. The sulfur precipitation is seen and a sulfurous acid smell is noticed.

The reactions which are taking place during the decomposition of hypo by acid have been studied and described in detail in a paper which was published in 1924 from a dissertation by the present author<sup>3</sup>. This research was executed in the Physical-Chemical Institute of the University of Berlin under supervision of Professor Dr. E. H. Riesenfeld who worked out with his students new methods of analyzing polythionic acids which were previously unknown<sup>4</sup>. When Riesenfeld and the author undertook this research, theoretical reasons only were decisive. At that time (1922), acids were not used in hypobaths but were introduced later. This may be one of the reasons why the results of our experiments are not known at present in the field of photographic chemistry.

Starting from the simplest reaction, namely the acidification of sodium thiosulfate solution, a chance was given to study the influence of sulfurous acid ions in this thiosulfate solution since according to formula I sulfurous acid is being formed. This was not the first research which was undertaken to clear up the mechanism of the reaction. A number of well known scientists looked into this problem since the middle of the last century. They found or believed they had found that not only sulfurous acid and sulfur but also sulfuric acid, hydrogen sulfide, tetrathionic acid and different polythionic acids are formed. But nobody reported any success either in determining the molecules quantitatively or in determining their mutual reactions with each other. Mees, in his "Theory of the Photographic Process", mentions the research of the famous chemist Landolt titled "Time of Existence of Thiosulfuric Acid in Aqueous Solutions" but this work could not be considered as an accurate investigation since the reactions were executed in open (!) beakers so a part of a participant - sulfur dioxide - escaped the analysis.

#### Variety of Molecules Present in Acidified Thiosulfate Solutions and its Determination

An exact examination of all the investigations at hand showed that the following molecules could *not* be present in acidified thiosulfate solutions, namely:

(a) Hydrogen sulfide. According to the research of Hollemann it could not be found in diluted or in concentrated solutions.

(b) Dithionic acid. According to the same author it exists only in the presence of hydrogen peroxide.

(c) Tetrathionic acid.

Sander<sup>t</sup> and Mackenzie and Marshall<sup>8</sup> found out that only one percent of thiosulfuric acid and the presence of sulfur dioxide would be enough to start the decomposition, forming sulfur and trithionic acid. Since in all of the analyzed solutions sulfur dioxide as well as enough thiosulfuric acid were present, only trithionic acid and pentathionic acid from the group of polythionic acids were subjected to the analysis. Raschig specified a method of determination for pentathionic acid. The trithionic acid could not be determined by analysis but could be calculated. The correctness of this method was proved by the quantitative analysis. Consequently the following molecules have to be analyzed side by side: sulfur, thiosulfuric acid, trithionic acid, pentathionic acid, sulfurous acid and sulfuric acid.

#### Determination of Thiosulfuric Acid and Sulfurous Acid

Thiosulfuric acid and sulfurous acid react with iodine solution according to these equations:

$$2H_2S_2O_3 + I_3 = 2HI + H_2S_4O_6$$
  
 $H_2SO_3 + I_3 + H_2O = 2HI + H_2SO_4$ 

i.e. a millimoles of thiosulfuric acid consumes a milligram atoms of iodine and b millimoles of sulfurous acid consume 2b milligram atoms of iodine or, since neither sulfur nor polythionic acids nor sulfuric acid react with iodine solution, the total consumption measured in cubic centimeters of a normal solution of iodine is

$$\alpha = a + 2b (1)$$

A second equation for a and b is obtained by the different behavior of sulfurous acid titrated with sodium hydroxide if on the one hand phenolphtalein is applied as indicator and on the other hand methyl orange. Sulfurous acid behaves like a dibasic acid against phenolphtalein, whereas the end point of titration against methyl orange is reached when half of the acid is neutralized?

In carrying out these titrations it must be borne in mind that all acids—as sulfurous acid, polythionic acids, sulfuric acid and thiosulfuric acid—are titrated together. All of them except the sulfurous acid are strong dibasic acids and show the same end point of titration with methyl orange and phenolphtalein. Assuming a millimoles of thiosulfuric acid, b millimoles of sulfurous acid, c of pentathionic acid, d of trithionic acid, e of sulfuric acid, let  $\beta$  represent the consumption in cubic centimeters of normal sodium hydroxide with phenolphtalein as indicator and  $\gamma$  the consumption of normal sodium hydroxide measured in cubic centimeters using methyl orange as indicator. Thus:

$$2(a+b+c+d+e)+2b=\beta
2(a+b+c+d+e)+b=\gamma
b=\beta-\gamma$$
(2)

Since now b is known, transformed equation (1) gives  $a = \alpha - 2 (\beta - \gamma)$  (3)

### Determination of the Precipitating Sulfur

The sulfur was oxidized to sulfuric acid and determined as barium sulfate. This result was controlled by a second method which consisted in precipitating the sulfuric acid in the form of benzidine sulfate and titrating with sodium hydroxide. If  $\zeta$  are the found millimoles of barium sulfate or benzidine sulfate and o the amount of sulfur measured in milligram atoms, thus

0 - (4)

Table I

CHANGES DURING AGING OF EQUAL MOLAR AMOUNTS OF 0.1 N SODIUM THIOSULFATE REACTING WITH HYDROCHLORIC ACID

	Time of Reaction									
	Min.	Min.	30 Min.	1 Hour	Hrs.	Hrs.	Day	Days	16 Days	25 Days
(a) Consumption of iodine solution	5.06	5.76	6.03	6.41	6.65	6.79	6.57	6.59	5.80	5.90
(a') Consumption of iodine solution after neutralization and addition of sulfite	4.68	5.52	5.75	6.17	6.15	6.26	6.41	6.00	5.15	3.72
(a-a') Subtraction	0.38	0.24	0.28	0.24	0.50	0.53	0.16	0.59	0.65	0.18
(B) Consumption of sodium hydroxide in presence of phenolthtalein	5.12	4.87	4.63	4.81	4.43	4.37	4.36	4.25	3.77	3.82
<ul> <li>(γ) Consumption of sodium hydroxide in presence of methyl orange</li> </ul>	4.63	3.65	3.35	3.04	2.53	2.43	2.07	1.99	1.93	1.91

#### Determination of the Originating Sulfuric Acid Together With the Trithionic Acid

After a specially executed investigation showing that benzidine gives no precipitate with trithionic acid, pentathionic acid and in general none with any of the polythionic acids, the following method was used. The reaction liquid was titrated with iodine solution. It contained then, besides the amount of sulfuric acid which was formed by the oxidized sulfur dioxide, f, additional quantities obtained through the reaction itself, e. The first amount of sulfuric acid is already known from the previously ascertained value of sulfuric acid:

$$f = b = \beta - \gamma \quad (5)$$

The sum of both, &, results now from a precipitation with benzidine solution in cold thus

$$e + f = 8$$
 (6)

In consideration of (2) and (5) results:

$$e = \delta - b = \delta + \gamma - \beta \qquad (7)$$

If now a second test of the solution after titration with iodine is treated with barium chloride at boiling temperature, another sulfuric acid molecule is precipitated as barium sulfate, namely the one which comes from the decomposed trithionic acid. This decomposition takes place according to the equation (Debus)

$$H_2S_3O_0=H_2SO_4+S+SO_2$$

Pentathionic acid and tetrathionic acid (from the oxidation of the thiosulfuric acid through iodine) do not decompose in the short time of heating as Debus proved, a matter of fact confirmed by Foerster and Hornig<sup>12</sup>. If d indicates in millimoles the trithionic acid and g the sulfuric acid, which was formed from it by the described method, thus

and if e is the amount of sulfuric acid precipitated by barium chloride, then

$$e + f + g = \epsilon$$
 (9)

By subtraction of equation (6) from (9)

$$g = \epsilon - \delta$$
 (10)

According to (8) also

$$d = \varepsilon - \delta \quad (11)$$

#### Table II

MILLIMOLES OF THIOSULFATE, SULFUROUS ACID, PENTATHIONIC ACID AND SULPHUR CALCULATED FROM DATA SHOWN IN TABLE I

Time of reaction	H <sub>2</sub> S <sub>2</sub> O <sub>2</sub>	H <sub>2</sub> SO <sub>2</sub>	H <sub>2</sub> S <sub>6</sub> O <sub>6</sub>	5
0 minute	5.0	-		
1 minute	4.08	0.49	0.19	0.40
15 minutes	3.32	1.22	0.12	1.54
30 minutes	3.47	1.28	0.14	1.08
1 hour	2.87	1.77	0.12	1.89
2 hours	2.85	1.90	0.25	1.15
4 hours	2.91	1.94	0.26	0.94
1 day	1.99	2.29	0.08	2.33
2 days	2.07	2.26	0.28	2.20
16 days	2.12	1.84	0.32	2.32
25 days	1.90	1.91	0.09	3.80

#### Determination of the Pentathionic Acid

Raschig found out that pentathionate disintegrates in neutral solution with the help of sodium sulfite to trithionate and thiosulfate according to the equation

$$Na_2S_5O_6 + 2Na_2SO_3 = Na_2S_2O_6 + 2Na_2S_2O_3$$

Since the reaction solution contains sufficient sulfite, a new iodine titration of the previously neutralized solution and  $\alpha'$  consumption of iodine permits the amount of newly originated thiosulfate to be calculated.

Two millimols of thiosulfate correspond to one millimol of pentathionate, so

$$c = \frac{\alpha - \alpha'}{2} \quad (12)$$

This is the amount of pentathionic acid.

#### How the Analysis was Executed

Known quantities of thiosulfate and acid were mixed together. The vessels were firmly closed and a constant temperature was kept. The vessels were placed in a water bath controlled by an automatic thermo-regulator. Three concentrations were submitted to the analysis. (1) equal molar amounts of 0.1 N sodium thiosulfate reacting with 0.1 N hydrochloric acid, (2) equal molar amounts of 2.6 N of both, and (3) two mol of 2.6 N hydrochloric acid with 1 mol 2.6 N sodium thiosulfate.

To prevent the escape of sulfurous acid from the solution, the reaction flasks were filled totally and very carefully closed with well pressed and paraffined cork stoppers. After corking, the flasks were immersed in fluid paraffin which formed a reliable seal. When the higher concentrated solutions were mixed, this sealing was not sufficient. The  $SO_2$  pressure was too high so sealing wax was used. The temperature of the water bath was kept at  $22.4 \pm 0.5$  C. Erlenmeyer flasks of 50 cc volume were used for the 0.1 N solutions. They were charged with 25 cc of 0.1 N solution of sodium thiosulfate and 25 cc of 0.1 N hydrochloric acid. The higher concentrated solutions were examined in Erlenmeyer flasks of 24 cc volume with 12 cc thiosulfate and 12 cc hydrochloric acid as well as 16cc 2.6 N hydrochloric acid and 8 cc 2.6 N thiosulfate. From the lower concentrated solutions 10 cc were taken for each of the different analyses. The higher concentrated reaction solu-tions could not be treated this way as sulfurous acid escaped when they were opened. Since four tests had to be analyzed simultaneously, four flasks were prepared at the same time. Each titration was made in its own flask. These flasks were closed with a double pierced cork. Through one bore hole a 2 cc pipette reached the middle of the solution inside the flask. Its upper end was closed by a short piece of rubber hose with a glass stopper. The other bore hole carried a glass tube which was closed the same way. For taking out the test solutions, the stoppers were removed and the solution squeezed into the pipette with a rubber bulb. Solutions which were exposed to the reaction for a short time only contained some colloidal sulfur which was sucked up into the pipette. But it was ascertained that this sulfur was not reacting with iodine solutions.

The following solutions were prepared for the volumetric analysis. For a standard titrimetric substance, a 0.1 N solution of chemically pure oxalic acid served. With this a 0.1 N potassium permanganate solution was standardized. This solution served to standardize the 0.1 N and 2.6 N solution of sodium thiosulfate after a few days of waiting and controlling several times. This solution was used to standardize the iodine solution. One-tenth normal sodium hydroxide was prepared from a very pure piece of caustic soda which was purified with alcohol. A few drops of added baryta water precipitated barium car-

#### Table IV

MILLIMOLES OF THIOSULFATE, SULFUROUS ACID, PENTATHIONIC ACID, TRITHIONIC ACID, SULFURIC ACID AND SULFUR CALCULATED FROM DATA SHOWN IN TABLE III

1 Time	H.S.O.	H <sub>s</sub> SO <sub>b</sub>	HSO.	HSO.	6 HSO	7 Sul	8 Ifur
	A	b	C	d	e	Precip.	Total
0	26.00	-	-		Management	-	52.00
4 Hrs.	11.37	5.57	1.01	2.03	2.62	12.0	54.00
1 Day	7.64	2.04	1.24	2.05	1.66	13.3	46.3
2 Days	3.92	1.79	0.66	0.40	1.46	14.5	30.1
4 Days	3.38	1.27	0.35	1.1	2.2	15.0	30.3
8 Days	2.80	0.76	0.19	2.2	2.6	16.4	32.9
4 Wks.	1.73	0.73	0.38	0.1	6.2	18.4	30.9
6 Mo.	0	1.85	81.0	0	14.3	34.0	51.1

bonate. This solution was filled into a Woulff bottle of an automatic replenishing burette. Soda-lime tubes protected this solution against the carbon dioxide of the air. Its titer was standardized with the above mentioned oxalic acid solution and a 0.1 N hydrochloric solution from an analytical laboratory. The conformity of both titrations served as a control.

#### **Examination of the Single Tests**

The first test was brought into 0.1 N iodine solution in excess under constant stirring. The excess was titrated back with 0.01 N solution of thiosulfate, so the value of  $\alpha$  was found. The same mixture was brought to reaction with barium chloride with heat to find the value of  $\alpha$ . A second solution of that kind was treated with a solution of benzidine to find the value of  $\delta$ , sucked off and treated as described by Friedheim. A third test was made to find out  $\gamma$  by the neutralization with sodium hydroxide in the presence of methyl orange and the fourth in the presence of phenölphtalein as indicator. (value of  $\beta$ ). To determine  $\alpha'$ , this fourth test solution could be used right away after neutralization. It was poured into a 0.1 N iodine solution and titrated back with 0.01 N thiosulfate. To make sure that the Raschig reaction took place, an exactly known amount of sodium sulfite was previously added. To avoid a fast change of the titer, a small amount of alcohol was

Table III

CHANGES DURING AGING OF EQUAL MOLAR AMOUNTS OF 2.6 N SODIUM THIOSULFATE REACTING WITH HYDROCHLORIC ACID

	Time of Reaction							
	Hrs.	Day	Days	4 Days	B Days	Wks.	Mo.	
(a) Consumption of iodine solution	22.51	11.72	7.50	5.92	4.32	2.63	3.00	
(a') Consumption of iodine solution after neutralization and addition of sulfite	20.5	9.24	6.17	5.21	3.93	1.94	2.65	
(a-a') Subtraction	2.01	2,48	1.33	0.71	0.39	0.77	0.35	
(B) Consumption of sodium hydroxide in presence of phenolthtalein	11.1	5.6	3.32	2.03	1.33	2.79	9.45	
(γ) Consumption of sodium hydroxide in presence of methyl orange	5.53	3.56	1.53	0.76	0.57	2.06	7.60	
(β-γ) Subtraction	5.57	2.04	1.79	1.27	0.76	0.73	0.18	
(a) Sulfuric acid precipitated by barium chloride	1.05	0.65	0.36	0.45	0.57	0.72	1.54	
(8) Original sulfuric acid plus sulfuric acid from the reaction	0.84	0.37	0.32	0.34	0.34	0.80	1.61	
(3) Sulfur by gravimetric determination of sulfate	1.23	1.36	1.42	1.52	1.65	1.84	_	
(5) Sulfur by precipitation as benzidine sulfate and titrated with sodium bydroxide	1.17	1.30	1.48	1.48	1.63	1.85	3.40	

	Time of Reaction						
	Hrs.	Day 1	Days	Days	Days	Wks.	
(a) Consumption of iodine solution	35.40	40.50	39.56	39.43	36.60	36.82	
<ul> <li>(a') Consumption of iodine solution after neutralization and addition of sulfite</li> </ul>	33.45	37.65	39.56	37.05	34.90	35.40	
(a-a') Subtraction	1.95	2.85	0	2.38	1.70	1.42	
(B) Consumption of sodium hydroxide in presence of phenolthtalein	43.50	50.55	47.25	44.85	43.27	48.00	
(7) Consumption of sodium hydroxide in presence of methyl orange	28.00	30.75	25.50	25.80	25.50	30.40	
(β-γ) Subtraction	15.50	19.80	21.75	19.05	17.77	17.60	
(a) Sulfuric acid precipitated by barium chloride	1.65	1.95	1.99	2.06	1.86	1.81	
(8) Original sulfuric acid plus sulfuric acid from the reaction	1.54	2.04	2.04	2.04	1.87	1.87	
(1) Sulfur	1.96	1.94	2.40	2.33	2.40	2.42	

added. Concentrated reaction solutions generated enough sulfurous acid to get the necessary sulfite-surplus. The precipitated sulfur \( \xi \) was filtered, washed in water, suspended and oxidized with bromine and nitric acid. The nitric acid was neutralized with alkali, poured in a measuring flask and a part of this solution used for a gravimetric determination of sulfate. Another part was precipitated as benzidine sulfate and, according to the directions of Friedheim, titrated with sodium hydroxide.

#### Conclusions

Under the assumption that the chief reaction answers at the beginning to the equation

$$H,S,O, = H,SO, + S$$

the amount of precipitated sulfur should be equivalent to the found sulfurous acid. According to Table II rows 3 and 5, this corresponds indeed at the beginning and only after 4 hours does the reaction begin to take a noticeable other course. From now on, the iodine titer drops (Table I,) and at the same time more sulfur than is equivalent to the sulfurous acid is precipitated. Resulting from Table II, row 2 the millimoles of thiosulfuric acid remain nearly constant from the first to the 25th day of observation. Here the evidence is produced that  $S_2O_2$  ions are relatively stable also in weak acid solutions. In another series of tests which are not mentioned in this abbreviated résumé, the authors still found free thiosulfuric acid after 8 months. Pentathionic acid is found in small amount from the beginning of the reaction.

The formation of pentathionic acid is produced by the reaction of the sulfurous acid with the colloidal sulfur which comes from the decomposition of the thiosulfate.

5SO<sub>2</sub> + 5S + 2H<sub>2</sub>O = 2H<sub>2</sub>S<sub>3</sub>O<sub>6</sub> (A) Therefore the reaction between thiosulfate and acids proceeds as follows:

Besides the principal reactions

$$S_2O_3^{\circ} = SO_3^{\circ} + S$$
  
 $SO_3^{\circ} + 2H^{\bullet} = SO_2 + H_2O$ 

the side-reaction (A) occurs.

Tables I and II serve only to show that free thiosulfuric acid is long-lasting and does not decompose immediately in acidified solutions and that, as a by-product, pentathionic acid is formed.

Tables III and IV deal with data which are closer to the proportions used in photographic hypo baths where sodium sulfite in surplus is added with the acetic acid as a part of the hardener solution. Molar amounts of sodium thiosulfate and acid in 2.6 N solution release more sulfuric acid and include the determination of trithionic, sulfuric acid, and sulfur as shown by the analysis. Just as in the diluted solution, thiosulfuric acid is only slowly decomposing and disintegrates to sulfurous acid and sulfur. But not all of the sulfur is used for the forming of pentathionic acid and the secondary reactions. One part remains in the solution, colors the solution yellow and escapes the analysis (missing sulfur in row 7, Table IV.) Raffo34 found earlier that in these solutions colloidal sulfur is formed and we were able to separate it with lanthanum chloride in three minutes. Freundlich und Scholz15 observed this phenomenon also and explained that this socalled "Odén-sulfur" is strongly retained by pentathionic acid and forms very durable micella with water. Irregularities in the trithionic acid column must also result from this phenomenon. The other part of the missing sulfur belongs to a hitherto unknown "sulfur-acid" compound discovered for the first time by the authors\* and, after a special research, formulated as (S2O3 (H2O) ), an hydrate of S<sub>2</sub>O<sub>3</sub>. The first part of the colloidal sulfur reacts as already shown with sulfurous acid in forming pentathionic acid. After more time passes, Table IV yields sulfurous acid, pentathionic acid decreases and trithionic acid and sulfuric acid increase. Thus

$$S_5O_6^{\circ}$$
 +  $2SO_3^{\circ}$  =  $2S_2O_3^{\circ}$  +  $S_3O_6^{\circ}$  decreasing regenerated

$$S_3O_4^{\circ}+H_2O=SO_4^{\circ}+S_2O_3^{\circ}+2H^{\circ}$$
 disappearing slowly formed regenerated

In both cases thiosulfuric acid is newly formed and was still detectable after four weeks. Sulfuric acid in larger quantities is formed slowly (after 4 weeks) and trithionic acid accordingly disappears more and more as the last formula shows. This was established by Foerster and Hornig<sup>12</sup>.

<sup>\*</sup> The compound S<sub>t</sub>O<sub>3</sub>(H<sub>2</sub>O) is not the same as H<sub>2</sub>S<sub>2</sub>O<sub>4</sub> (hyposulfurous acid) which is very unstable in solution. The complex compound S<sub>2</sub>O<sub>4</sub>(H<sub>2</sub>O) has a deep yellow color. It was observed for two days stable in this solution. It is not ionized. Detailed information is given on pages 26 to 31 of reference.

The examination of the strongest solution of equivalent amount of thiosulfuric acid and hydrochloric acid (Table V and Table VI) shows that in this case the decomposition proceeds according to the well known equation:

Still after four weeks, 4 per cent free thiosulfuric acid is found. The amount of colloidal sulfur is nearly zero and the solution is almost completely colorless. Consequently practically no pentathionic acid, no trithionic acid nor sulfuric acid were determined. The sulfurous acid is not used up by any transformation or secondary reactions. Besides the 4 per cent thiosulfuric acid, the analysis showed after four weeks only precipitated sulfur and sulfurous

#### Summary

The activity of sulfite is decisive for the stability of thiosulfuric acid ions in acidified fixing baths. The decomposition of thiosulfate will be different depending on the concentration of the added acid. A different amount of sulfurous acid is released and enters hitherto unknown transformations with by-products of the decomposed thiosulfate. Assuming that a not too strong acid solution and a surplus of sodium sulfite (as used in hardener solutions) is applied, sulfurous acid helps to form pentathionic acid which produces new thiosulfuric acid and trithionic acid. The latter decomposes and produces another part of thiosulfuric acid and sulfuric acid, or expressed in formulas:

$$H_2S_2O_3 = H_2SO_3 + S$$
 $H_2SO_3 = H_2O + SO_2$ 
 $5S + 5SO_2 + 2H_2O = 2H_2S_2O_4$ 
 $S_0O_4^* + 2SO_3^* = S_2O_4^* + 2S_2O_3^*$ 
 $S_2O_4^* + H_2O = SO_4^* + S_2O_3^* + 2H^*$ 
Free thiosulfuric acid is noticeable for a long time on

- (1) the slow decomposition of the thiosulfate itself.
- (2) the direct action of sulfurous acid upon colloidal sulfur, producing pentathionic acid as an inter-
- (3) the direct action of sulfurous acid upon this pentathionic acid and trithionic acid.
- (4) the indirect action of having formed trithionic acid which decomposes to another molecule of thiosulfuric acid and a molecule of sulfuric acid.

So the explanation for the long stability of thiosulfuric acid in acidified solution is traceable to a certain kind of

\* An article by A. R. Greenleaf in "American Annual of Photography 1951" titled "Hydrogen-ion Concentration" assumes (page 54) that sodium sulfite and acid form bisulfite ions which retard the decomposition of hypo according to

by shifting the equilibrium to the left. It is unlikely that sulfite and acid would form the very unstable bisulfite in this weak solution which breaks down very soon to SOs and SOs ions.

With the precipitation of sulfur the equation shifts to the right side of the equilibrium. Nobody has observed as yet the formation of bisulfite. The results of the research reported here contradict the Greenleaf hypothesis.

#### Table VI

MILLIMOLES OF THIOSULFATE, SULFUROUS ACID, PENTATHIONIC ACID, TRITHIONIC ACID, SULFURIC ACID AND SULFUR CALCULATED FROM DATA SHOWN IN TABLE V

1	H <sub>S</sub> O <sub>1</sub>	H <sub>s</sub> SO <sub>s</sub>	H.SO.	H.S.O.	H.SO.	7 - Sulf	8
Time	a a	b	E	d	6	Precip.	Total
0	26.00	-	_	****	-	_	52.00
4 hrs.	4.00	15.5	0.8	1.1	0	19.6	50.4
1 day	1.00	19.8	1.4	0	1	19.4	52.2
2 days	0	21.7	0	0	0	24.0	45.7
4 days	1	19.1	1.1	0	1	23.30	50.9
8 days	1	17.8	0.8	0	1	24.0	48.8
4 wks.	1	17.6	0.7	0	1	24.8	48.4

"chain reaction" produced through the activity of sulfurous acid ions.4

In older and newer photographic instruction books and magazine articles about fixation, it is often recommended without giving the reasons—that acid be added at regular intervals during use in order to prolong the life of a fixing bath. This would prolong the usefulness of the bath to the limit of its capacity to dissolve silver halides. As a practical result of this research it seems to be more advisable to add not only acid but also sodium sulfite to prevent the regeneration of thiosulfuric acid.

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# CORRECT EXPOSURE FOR EVERY LATITUDE

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M ANY PHOTOGRAPHERS understand the way in which solar altitude influences the correct exposure of film at different hours of the day and during different months of the year. When vacation trips take them far north or south of familiar localities, however, they sometimes overlook the effect of latitude changes on solar altitude and on the problem of correct photographic exposure.

This same problem, but in a more serious form, confronted the U. S. Navy during World War II when many experienced and capable photographers had difficulties obtaining good exposures in distant latitudes both north and south of the equator. The Navy brought the problem to the American Standards Association and the resulting American Emergency Standard Photographic Exposure Computer (issued in March 1942) was put into the hands of cameramen in all branches of the Armed Forces.

After the military demand subsided, the American Standards Association received so many orders from civilians that the Photographic Exposure Computer became the most popular American Standard ever issued.

A revision of the Emergency Standard Computer issued in 1950 has been well received by more than 5000 purchasers. The committee which undertook the revision added more up-to-date radiant energy data to correct some of the tables. New pictures were chosen to replace the military scene classifications. Of more importance, perhaps, to the pastime photographer was the inclusion of data for calculating the exposure of reversible films, black-and-white as well as natural color types, which constitute a special case because of their more limited exposure latitude. An appendix was added giving authoritative exposure indexes for the films currently available from American manufacturers. This made the revised Exposure Computer a complete device for ascertaining the correct exposure to give various types of black-and-white as well as natural color film in all types of hand-held motion picture and still film cameras under all conditions of daylight illumination.

The American Standard Photographic Exposure Com-



puter Z38.2.2-1949, like the earlier Emergency Computer, has been printed on heavy card stock and has for durability and ready reference a special binding and simulated leather covers. The calculator dial mounted on page 3 instantly shows the permissible range of shutter times and lens openings for any indicated set of picture-taking circumstances. A light index value from the data tables is added to a scene index value from the scene structure pages and the sum is set opposite the film exposure index value. No other adjustments or calculations are required either to ascertain the correct exposure for the scene that confronts the photographer at the instant or to determine, in advance, the correct exposure to give "Monument Rock" the following morning two hours after sunrise if the sky is cloudy, bright.

Other American Standards of interest and value to photographic workers that have been issued since the beginning of the present year are listed below.

DIMENSIONS FOR FILM PACKS Z38.1.1-1951, a revision combining two earlier standards with new requirements for the location of the slot through which the tabs extend and establishing values that control the location of the exposure numerals on the

DIMENSIONS FOR PHOTOGRAPHIC DRY PLATES Z38.1.30-1951, revised to include thickness values for American-made glass.

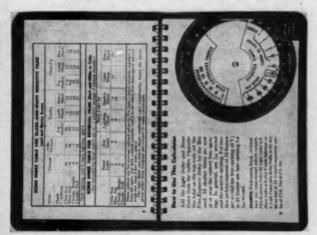
DIMENSIONS FOR 35MM MAGAZINE FILM (for Miniature Cameras) Z38.1.49-1941, with a new dimension governing the maximum width of the tongue to avoid troubles with several European and American cameras having takeup spools that would not accept a standard (maximum) width tongue.

DIMENSIONS OF PHOTOGRAPHIC DOUBLE FILM HOLDERS of the Lock Rib Type Z38.1.51-1951. For the first time in a national standard, the dimensions are recognized for five standard sizes of holders that govern (a) the acceptance and retention of the film, (b) the size of the picture area exposed on the film, (c) the focus position of the film with respect to the camera back and (d) the dimensions and location of the "lock rib" to insure light-tightness of the holder when the dark slide is withdrawn.

DIMENSIONS OF SPOOLS FOR RECORDING INSTRUMENTS AND STILL PICTURE CAMERAS (Four separate Standards) Z38.1.52-1951. through Z38.1.53-1951. Dimensions of four sizes of film spools for film widths from 16mm to 70mm are established. The films in question are similar to motion picture films but are used either for continuous (non-intermittent) recording or for still picture records, including microfilming.

FLASH SYNCHRONIZING EQUIPMENT, Bipost Type Connecting Cord Ends and Pins Z38.4.26-1951 and

FLASH SYNCHRONIZING EQUIPMENT, Bayonet Type Connecting Cord Ends and Pins Z38.4.27-1951 are two standards recognizing the governing dimensions of two popular American-made connections. It is expected that these standards will be of interest and value to many manufacturers of flash lamp equipment in enabling them to design and produce units that will fit internal synchronization shutters and attachment fixtures of the standard types.



<sup>\*</sup> Secretary of the Photographic Standards (Correlating) Committee, American Standards Association, Incorporated, 70 East Forty-Fifth Street, New York 17, New York. Received 4 June, 1951.